the tortures of hell. Iblis, however, communicated his secret to the blacksmiths, who since that time have known how to use it for metalworking.

The Tuareg used to obtain fire by friction, using a board of torha (callotropis procera) and a branch of hardwood; they caught the spark on a tuft of silk from the fruit of the callotropis and blew on it until they got a flame, which required about a minute. They have kept this practice and still use it occasionally.

Today they find matches sold by /228/ Tamanrasset merchants, but they all have tinderboxes with flint and a bent piece of iron.

They do not keep up the fire. They carry it from one tent to the other in a fragment of an old gourd or sometimes hold a glowing ember in their hands without burning themselves. When they want to transport it long distances, they use camel-dung embers.

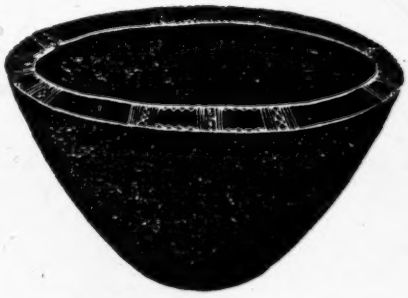

Fig. 27. Ahaggar Tuareg dish, imported from Hausa country.

The Tuareg commonly use the excrement of camels and goats as fuel. In the high mountains, wood is quite rare, but in the lower parts of the Koudia old acacia or éthel /atle? Ed./ stumps are to be found. They never use the wood of the callotropis, which is the devil's tree and makes muffled noises when it is burned.

Basalt blocks are never used to make the hearth, since they believe that basalt is possessed by genii and will explode violently when heated.

Furniture. -- We have briefly described the objects furnishing the parts of the tent reserved for the husband and wife. To these must be added a certain number of objects which make up the

824 ● 222

To make up this deficiency in graminaceae, the Tuareg have recourse to products of gathering.

After a rain the captives and the Imrad women gather the seeds [862] of certain plants which grow in the Ahaggar valleys. They are the afasso (Panicum turgidum F.) and the oulloul (Aristida pungens D.). But the size of the yield varies with the abundance of rain, and one may say that most of the time it is quite /233/ uncertain. [237 281 415 234] This is not the case in the Sudan, where the Iklan gather whole bags of wild seeds, particularly cram-cram (Cenchrus echinatus), every year.

Fig. 31. Little leather flask used as a butter container.

To be sure, there are a few wild berries in the Ahaggar, such as those from the jujube tree (Zizyphus lotus D.) and the téborak (Balanites aegyptiaca). In case of famine the Tuareg fall back on other seeds, such as those of the colocynth, the Acacia tortillis, etc. However, all these plants play only a secondary role in the Tuareg diet. [731] [262]

The Tuareg have at their disposal milk from their camels, goats, and ewes. They drink it either whole or diluted with water, either fresh or sour. 272

The luxury of drinking whole milk is reserved for young mothers and children. Adults generally drink fresh milk morning and [264]

have made them the base of their diet; for this reason they were nicknamed acridophages. The Nasamonians of Herodotus prepared them in the same way the Tuareg do, and the /236/ similar diets of the two peoples is perhaps not pure coincidence.

There are a few fish ponds in the Ahaggar, but the Imochar and the Imrad do not eat the flesh of these animals; only the Issekkemären catch barbels and sometimes catfish, or rather they gather them up in the wadis after floods, for they do not know how to fish, properly speaking.

The sedentary peoples raise chickens, but the Tuareg do not eat them either, since they consider the meat impure. The same interdict is extended to eggs. The only bird which is an exception is the ostrich. There are no longer any ostriches in the Sahara, but when the Ihaggaren go to the Sudan they capture them if they have the chance; in addition, they eat ostrich eggs cooked in the ashes.

Times of scarcity were sometimes experienced. They are rare now that caravans can circulate freely, but they were much more frequent when the state of war continued for a long time. The Tuareg fell back on wild plants which do not generally enter into their diet: the young growths of tahlé (Typha elephantina), the leaves of the tanekfit (Eruca aurea) and the aramas (Atriplex halimus), the underground stems of the danoun (Cistanche lutea) which resembles asparagus, and many other plants of very dubious food value, which they ate to assuage their hunger. The state of famine can become so pronounced that they sometimes gather up old bones, grind them up, reduce them to flour, and make gruels of them. It goes without saying that it is during these periods that pillaging is at its height. People steal from camp to camp, from tribe to tribe, and everyone forgets his brother and his friend, thinking of only one thing -- survival by any means.

care given to the body, but they find washing completely useless and even disastrous to health. They even claim that if they washed every day they would become ill. Their argument is that daily ablutions of the limbs make the skin scale off.

For them the main question is protecting the different parts of the body from the rigors of the sun. All the care that they give the body is to that end.

They are in the habit of wearing clothing of material heavily dyed with indigo which comes off on the skin, giving it a dark-blue color. Far from trying to remove this dye by washing, they become prouder of themselves as the layer of blue becomes thicker. They rub their limbs and faces with new materials to obtain the desired color.

To make their skin softer and more brilliant they smear their limbs with a fatty substance, butter or animal fat. This custom is also adopted by Sudanese Negroes and the desert Arabs.

The Tuareg pay the most attention to the mouth and teeth. They rinse out their mouths with a lot of water after each meal and brush their teeth with little branches which have one end chewed to form a brush. For this purpose they use irak branches (Salvadora persica) or palm jereed.

/258/ The men and women are very fastidious about caring for the hair.

Young boys have their heads shaved except for a crest or tuft of hair left on the top. Men wear long braided hair, with a little halo shaved on the front of the head. They have their hair dressed by their sisters or their female friends, in return for which they offer them a bit of tobacco. The hair styles vary from region to region. They may include a greater or lesser number of braids; the braids may hang down in back or be lifted to the top of the head. At a certain age, when the hair begins to get grey, the men have themselves shaved completely.

Wood furnishes containers for food, drinking vessels, milking vessels, mortars, pestles, tent stakes, crosspieces and boards for making saddles. The Ahaggar does not have more than five or six species of woods which can be worked, and the articles, very simply [redacted] are much less varied than in the Sudanese tribes.

All Ahaggar women, noble or vassal, know how to tan, remove hair from, sew, decorate, and embroider leather. They are able to make a waterskin needed to carry water, prepare skins to make tents, and manufacture bags for transporting food and personal objects. They have all become so expert in these labors that it is

Fig. 47. Amoula, a little wooden "bottle" for young children to drink from.

difficult to find any other peoples in the world who possess such a developed leather craft.

The scarcity of vegetable materials in the Ahaggar is one of the reasons why the use of esparto is relatively restricted. Only the stems of a graminacea common in the wadies (Panicum turgidum) are used to make mats -- large enclosing mats which surround the tent, sleeping mats, mats for covering plates.

/278/ The stems are bound by little leather thongs, and the combination of graminacea and leather is extremely effective; it allows very regular geometric decorations at the same time as a very solid work.

There are no esparto vans among the Tuareg. The women use palm-leaf vans and hats, but these articles are the work of the Harratin from the little palm groves of Silet, Ideles, and Abalessa.

586 refusing herself is a case for divorce, but disgrace is then thrown on the woman, who is rarely able to remarry afterwards. The man has only to say to his wife, "I send you back to your parents," to break the marriage. But more /295/ often he hides what he is doing and sends his wife home to her family for a few days. He then delegates an old woman from his camp to announce the breaking of the marriage to the wife's parents.

If the husband has instigated the divorce, the bride price remains the property of the wife's parents, but in any case the children remain the property of the father.

587 The woman cannot remarry before three months and ten days.
587 This forced retirement for women, which is prescribed by the Koran, is called ettef or ellouddet in Tuareg language. The women themselves are called tannanleft during this period. When this period has ended, her parents and the people of her camp organize a little celebration to announce that the woman is resuming her life of "free mores."

587 Many women do not want to undergo this retirement, and to
587 escape it they shift the responsibility onto a tree called agar in
824 Tamashek (Maerua crassifolia). They address the tree as if it were a person and say to it: "Agar, relieve me of my retirement which weighs on me too much; take the burden upon yourself." They place at the foot of the tree, by way of an offering, some antimony powder, a little perfume, and a fragment of cloth, which symbolize the attributes of a woman in the state of asri. Then, without waiting any longer, they resume their life of free mores.

587 If the husband wishes to take his repudiated wife back, a new marriage is necessary and a new bride price, smaller than the first, must be paid to the woman's parents.

Murder. -- Murder is rather rare among the Tuareg. It is
682 punished by retaliation when it was premeditated and by material
628 compensation in other cases. The vendetta, which was formerly common among the Tuareg, has disappeared, making way for the dia, or tax of blood. The custom sometimes demanded that the

773 had asked God to escape a raid which was coming to pillage her
778 camp. After the raid had passed, however, God kept the women
782 in the state of stone in spite of their entreaties, and it was so that life might be returned to them that the Tuareg came to leave different objects every time they passed near the tomb. The worship
[174] of the Tibaradines is certainly a trace of pre-Islamic and perhaps Neolithic beliefs which must have been deformed through the centuries. One of the statuettes represents a cow and is clearly related to the one found at Silet.

771 The remains of totemism are still affirmed by food taboos.
260 The nobles refuse to eat fish or bird flesh, as well as birds' eggs; only the ostrich escapes this interdiction. On the other hand, a
[825 legend even reports that the uran, or great sand lizard, is the
773] maternal uncle of all the Tuareg.

Some trees are also the object of worship. The Maerua
824 crassifolia which the Tuareg call agar is supposed to be inhabited by a genie which they chase away by striking the tree with stones every time they want to get in its shade. As we have already pointed out, repudiated women who do not wish to stay in the prescribed retirement as imposed by custom and want to take up the state of free living, rely on the tree to take over this retirement which bothers them so much.

754 Sorcery. -- Divination. -- Besides these more or less religious beliefs the Tuareg practice sorcery, divination, and the interpretation of dreams.

Some men, often blacksmiths, are known as sorcerors and make potions intended to cast spells; these are generally made of animal skins /309/ and are given to people who wish to cast a spell on someone, with the intention of taking him by surprise. The
[825] uran lizard plays a large part in the making of these sorceries.

787 Divination, practiced especially by women, is done in several ways and always aims to ask news of absent ones.

We have already mentioned divination through tombs. There is also what the Tuareg call tachilet (the viper). It is done either

tanned and sewed together. The assemblage of these hides [281]
constitutes the cover, the essential part of the tent, and is 342
called "ehakit" ⵀⴰⴽⴰⵜ .

The tent is supported by a central master beam called
"tamankaït" ⵜⴰⵎⴰⵏⴽⴰⵢⵜ .

A pole, "idjem" ⵉⴷⵊⴻⵎ , is placed at the entrance
of the tent and is flanked right and left by poles called
"madar'en" ⵎⴰⴷⴰⵔⵄⴻⵏ . /26/

Other poles are used to hold up the edges: these are the
"tissedass" ⵜⵉⵙⵙⴻⴷⴰⵙⵙ . The little pegs that hold the tent
to the ground are called "tisselitaï" ⵜⵉⵙⵙⴻⵍⵉⵜⴰⵢ . Some-
times bows are also used, called "adjedjou" ⴰⴷⵊⴻⴷⵊⵓ ,
plural "idjedjan" ⵉⴷⵊⴻⴷⵊⴰⵏ .

The tent is surrounded by mats of "afezzou" ⴰⴼⴻⵣⵣⵓ [285
(Panicum turgidum, Graminaceae), called "asabar" ⴰⵙⴰⴱⴰⵔ 824]
plural "isebran" ⵉⵙⴻⴱⵔⴰⵏ , which are pulled back in the
day and drawn close at night, to close the tent.

In the tent one finds first that which concerns water, that 352
is, waterskins, "abeïor'" ⴰⴱⴻⵢⵢⵓⵔ , plural "ibiyar'" 415
ⵉⴱⵉⵢⴰⵔ , hung on forked sticks, "tidjettaouin" ⵜⵉⴷⵊⴻⵜⵜⴰⵓⵉⵏ .
They are filled by means of a funnel, "asegueffi" ⴰⵙⴻⴳⵓⴻⴼⴼⵉ ,
plural "isegueffa" ⵉⵙⴻⴳⵓⴻⴼⴼⴰ . To water the camels, the 231
Tuareg use troughs of hide supported by hoops at the top and
called "tafaraout" ⵜⴰⴼⴰⵔⴰⵓⵜ , plural "tiferouin" ⵜⵉⴼⴻⵔⵓⵉⵏ .
They also use these troughs for the harvest of "toulloult" grain 243
(Arthraterum pungens, Graminaceae) or of "afezzou" (Panicum
turgidum, Graminaceae).

For milk and butter, they have a waterskin for milk, 415
"tanouart" ⵜⴰⵏⵓⴰⵔⵜ , plural "tinouarin" ⵜⵉⵏⵓⴰⵔⵉⵏ , and
a kind of porous water jug made of a hollowed gourd and called
"az'enou" ⴰⵣⵄⴻⵏⵓ . To ladle the milk, serve it or pour it,
they use a wooden vessel with one handle called "asoukal"
ⴰⵙⵓⴽⴰⵍ . To store and transport melted butter, "oudi," they
have waterskins of various shapes, the most common being the
one called "tahattint" ⵜⴰⵀⴰⵜⵜⵉⵏⵜ , but they also sometimes [281]
use the tanned hide of a camel's thigh. /27/

To feed young camels and lambs, they use a kind of 231
nursing bottle of wood shaped like a cup equipped with a tube. 415
This utensil is called "ar'alala" ⵄⵔⵄⵍⴰⵍⴰ .

For dishes, one finds in the tent wooden bowls of all sizes, 415
called "akous" ⴰⴽⵓⵙ , plural "ikassen" ⵉⴽⴰⵙⵙⴻⵏ ,
large wooden dishes, "tar'elalt" ⵜⴰⵔⵄⴰⵍⵜ , and smaller dishes
used as plates and called "tar'ehout" ⵜⴰⵔⵄⴻⵀⵓⵜ , plural ⵜⵉⵔⵄⴻⵀⵉⵏ
"tireha" ⵜⵉⵔⵄⴻⵀⴰ . To ladle milk or gruel, the Tuareg use
a large ladle, "temoulat" ⵜⴰⵎⵓⵍⴰⵜ , plural "timoulatin"

[361]

Dautheville

Tuareg Camp at Tazerouk

ⵜⴰⵎⵓⵍⴰⵜ , and for eating they have ordinary wooden spoons
called "tesoukalt" ⵜⵉⵙⵓⴽⴰⵍⵜ , plural "tsoukaline" ⵜⵙⵓⴽⴰⵍⵉⵏ .

To separate the grains of "toulloult" and "afezzou" from 252
their hulls, they use small trays of afezzou called "tissiit" 415
ⵜⵉⵙⵙⵉⵜ , plural "tissiin" ⵜⵉⵙⵙⵉⵏ .

They also use a great deal the wooden mortar, "akabar" 415
ⴰⴽⴰⴱⴰⵔ , with its pestle, "ihar'en" ⵉⵀⴰⵔⵄⴻⵏ .

Finally, they have hide sacks to hold dates or grains, which 281
they call "adjera" ⴰⴷⵊⴻⵔⴰ , plural "idjerouen" ⵉⴷⵊⴻⵔⵓⴻⵏ 415

All the above utensils are made of the wood of the 415
"teborak" (Balanites aegyptiaca, Simaroubaceae) and of the 824
abser', or "tamat," (Acacia arabica).

262
The nobles eat better, at least those who are well-to-do. 243
In the Ahaggar especially they own cultivated land in the 556
"ar'erems" (villages), where they grow wheat, "ired," barley, 565
"timzin," and bechna, "inelli"; but usually they sell their 423
438

[137]

Dautheville

Trees Called "Ahatés" (Acacia Albida) at the Tillemas of the Tessht Wadi (Koudia).

wheat and barley to the natives of the Tidikelt and are content with bechna, of which they are very fond. They claim that [824]
bechna is less heating to the stomach than wheat or barley.

The rich allow themselves the luxury of drinking tea, but 272
tea and sugar are very expensive, and they do not misuse them. 556
On the other hand, they do not hesitate to beg for them shame- 263
lessly.

When the year is bad anything seems good to the poor to 222
assure their subsistence. In such years one sees them eating 262
/30/ "berdi," or "taheli," (Typha angustifolia, Typhaceae); 735
ground carob seeds of "talhas," or gum trees, which they call 252
"tahaha" ⁝⁝⁝

When they want to stretch out at the foot of the tree called "el yatil" in Arabic and "tadjart" ⊕ⵜ in Tamashek (a kind of acacia), which is inhabited by jinn, they must first wound it with a stone, and stones are always to be found at the foot of these trees. One can also see the wounds made in the bark. 776 824 789

The "teborak" (Balanites aegyptica) is also a haunted tree. If one wants to rest under its shade, it is first necessary to break seven of the tree's thorns.

There are also "kel esouf" in the place where an animal has had its throat cut. 776

Mount Oudane is haunted, as are many others. [823]

These superstitions are probably survivals of their old religion, before their conversion to Islamism. Like them, "The Arabs of the pre-Islamic period worshipped jinn, or genii. The deserts and mountains where one sometimes gets lost for entire weeks are full of beings of this kind.... They can do much harm and much good.... They live in rocks, trees, or statues. Each tribe, or sometimes a group of tribes, had its special jinni; its rock, its tree, its own image, before which an appointed family carried out priestly duties" (1). 174 771 776

1. Essai sur l'Histoire de l'Islamisme, by R. Dozy, pages 5 and 6.

The Tuareg have many other superstitions. Thus nobles would never kill a "uran" (varanus), which in Tamashek is called "ar'ata" •ⵜ⁝, and a fortiori would not eat it. Sidi ag Keradji and Azioue1 ag Ser'ada told me that the uran is the maternal uncle of the Tuareg, and Sidi told me the following legend: "Seven nobles had killed a camel belonging to Sidna Nouh (Hoah). Among them there was a noble Tuareg. To punish them God changed them, one into an uran, another into a jackal, a third into a chameleon, etc. /61/ The uran was the noble Tuareg. The camel that was killed is now in the sky: it is the Great Bear. The Polar Star, 'Bel Hadi', is its head." 565 825 773 784 [821]

241 312 361

output is only enough to water the flocks, in the Ahaggar, on the contrary, a mountainous country where there is some water everywhere, a number of small villages called "ar'erem" ⵄⵔⵔⵉⵎ, plural "ir'ermane" ⵉⵄⵔⵔⵉⵎⴰⵏ, have been built.

312 565 361 463

Since the Tuareg, nobles or imr'ad, dislike all manual work, these villages could not have been built without the indispensible help of the Harratine of the Touat and the Tidikelt, whom the Tuareg call "Izeggar'en" ⵉⵣⴳⴳⴰⵔⵄⵏ, meaning "mulattoes." Everything was made by the latter: the wells, /74/ "tounine," which are used for irrigation, as at Tazerouk; the "foggaras," or covered wells, "ifelane," and their irrigation canals as at Abalessa, Tit, and Tamanrasset; the fitting up of springs, as at Tadjemout. The Harratine made the gardens and became khammes of the Tuareg, landowners. They settled in these villages and there built huts of "diss" (Imperata cylindrica) or of "berdi" (Typha angustifolia) and little houses of baked earth.

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The Harratine grow wheat, barley, and bechna in these gardens. These are the three essential crops, to which they add some vegetables: onions, kabouyas, or gourds, watermelons, and "guerroum" (a kind of long melon which is eaten green, like a cucumber, before it is ripe). Finally, at Tit they /75/ have planted some fine fig trees and a vine which yields a grape that seems delicious at this latitude. Similarly, at Abalessa, there are some vine slips and a fine palm.

241

Ideles (Koudia)

The gardens, or rather the fields, are enclosed by a hedge to prevent the depredations of the camels that graze free at night. But there are some that do not have this protective barrier, and the Harratine are forced to stand guard at night, turn, and turn about, lighting fires to drive the camels away from the crops.

754 /113 cont./ women chase it, beating the air with scarves and reciting secret words. They act as if they were madwomen.

The borbor is incorporated into couscous, which, it is said, may be turned with a hand taken from a dead person, but I have had few confirmations of that practice. The borbor is administered by throwing it in the path the victim should take, if it is impossible to make him eat it.

Whether intended as philter or poison, borbor differs very little in its composition; only the quantities must differ.

When a woman wishes the death of a rival, she has another process at her disposition. Having managed to obtain some menstrual blood of the enemy, she goes to a taleb /public scribe/ who specializes in magic; the latter wraps the blood in a paper or rag on which he writes sacred words; he then throws the package into a permanent séguia /irrigation canal/. As long as the seguia flows, the blood of the rival will flow, and she will die of this hemorrhage.

There is an antidote for borbor called "bottal," a blackish substance that one throws on embers and whose emanations counteract the effects of borbor.

824 754 Two plants must be mentioned here which, without being fatal, cause momentary insanity, according to the Tuareg: first, "afeleleh" ("bettina" in Arabic), black henbane, (the antidote consists of gulping down camel meat or, better, /114/ camel fat); second, "bourzig," taken by women who want to gain weight, but which taken in strong doses induces temporary madness during which the victim spouts out an endless succession of words which she does not remember later.

754 Magic operations are most varied, and everyone can expect each day to be the victim of them. The Negroes are haunted by this fear; the Tuareg do not seem to be worried by these magic maneuvers. However, everyone wears "tera," [751] protective charms issued by the taleb; thus the Moslem religion, more or less deformed, fights against magic or, sometimes, collaborates with it.

/175 cont./

103 Arak wadi
312 Gourdane wadi
Tadjmout wadi
Tiratimine wadi
Tibratine wadi
Takoula wadi
Takoumbaret wadi
Asabaï wadi
Amguid region, slope of the Igharghar:
et Tarara wadi
Hesses wadi
Rharis wadi
El Mahek wadi
Teghert wadi
Hamsa wadi
In-Herreki wadi

Region east of the Serkout massif:

This part of the Ahaggar is very little known; the wadis are tributaries of the Tafassasset wadi.

/177/ V

Flora

137 Tamahaq 824 Name	Arabic Name		Miscellaneous Observations
Ahtès		Acacia albida.	Rare.
Aliou		Olea laperrini.	In the high mountains.
Adjiar	El Iatim	Argan tree (?).	Hardwood, pasturage for camels, edible berries.

/177 cont./

137 Tamahaq Name	Arabic Name	Miscellaneous Observations
824		
Azaoua	Fersig	Tamarix gallica. Good pasturage. Khecba for roofing, zéribas.
Taberkat	Ethel	Softwood, used for bowls and spoons, salty pasturage; the fruit colors leather red.
Tamat	Tahala	Acacia seyal. Good pasturage, hardwood.
Absaq	Tahla	Acacia tortilis. Good pasturage, hardwood.
Teborak	Techat	Banalites aegypticae. Used for common objects; edible fruit, cough remedy.
Tihok	Irak	Shrub, softwood, used for cleaning teeth.
Telothat		Firewood.
Tedjert	Tedjert	Acacia eburnea. Seeds used in tanning; thorns; nails for rahla /camel's saddle/.
Tezzeit	Nakhla	Palm.
Thora	Kranka	Callotropis proscera. Wood for rahla; the sap causes ophthalmia.
Tehounek	Jeddari	Found in the Atakor. Firewood; used for tanning guerba /waterskins/.
Assellouf	Elhelhab	
Tarkat		Fruit which tastes like grapes, size of a jujube.
Edjaq		Hardwood, used to make rosary beads.

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Spontaneous Flora -- Herbaceous Vegetation -- Pasturage

	Tamashek Name	Arabic Name	Miscellaneous Observations
1.	Tiberimt	Lemmet	Pasturage for asses, to a small extent for goats, tastes like celery (umbelliferous).
2.	Ennedam		Acheb /pasturage/ plant.
3.	Tamadi		Acheb plant.
4.	Tamedout		Acheb plant.
5.	Azrem	Merkad	Acheb plant.
6.	Ourroug	Errega	Acheb plant.
7.	Tahaout	Rguig	Acheb plant.
8.	Tahnetnet	Tafsa	Perennial plant.
9.	Afessour	Cherelk	Acheb plant.
10.	Tanesmimet	Hamoued	Acheb plant; acid.
11.	Afazzou	Morakba	Panicum turgidum. Seeds eaten by the Tuareg; used, with straw, for making wind-breaking mats (asaber).
12.	Akalouad	Jonc	Typha augustifolia. For goats.
13.	Akecheker		Thorny plant. Permanent pasturage.
14.	Adrilal		Astralague prolixus. A sort of wild pea, very good pasturage.
15.	Alemmoz	Nçi	Aristida ascencionnis. Very good pasturage, in the zone of the peripheral trench after the rains.
16.	Telemmoust	Sfar	Very good pasturage. Zone: same as above.
17.	Aslak	Habalia	Acheb plant. Héliotropium ondulatum.

/178 cont./

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824

Tamashek Name	Arabic Name	Miscellaneous Observations
18. Imatelli		Acheb plant.
19. Askaf	Damrane	Traganum midatum. Very scarce in the Ahaggar, region of Tiffert.
20. Tadjemaît	Njem	Couch grass, near water points, mediocre pasturage.
21. Affelleleh	Bettina	Henbane. C uses madness for two or three days; its smoke is somniferous.
22. Aressou	Arta	Good pasturage.
23. Amateltel		Climbing plant, particularly on acacias, the size of a vine. Good pasturage.
24. Atarzim	Ghardek	Lotus of the Lotophagi (?) according to Duveyrier.
25. Alaouat	Gergir	Very good pasturage. In the large wadis after floods. Peripheral trench and Iforas.
26. Aremmas	Guettaf	Atriplex alimus. Laxative, very salty, mediocre pasturage.
27. Tabakat	Sedra	Jujube tree, Zizyphus lotus. Average pasturage, except for asses. /179/
28. Almès	Guesba	Reed.
29.	Defla	Oleander (poison, except for goats and gazelles).
30. Tedjellit	Coloquinte	Colocynth. Gazelles, goats, asses.
31. Alagoz	Hadjia	Sweet colocynth, edible.
32. Aftezza	Chebrok	Zilla macroptera. Very good pasturage.

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Tamashek Name	Arabic Name	Miscellaneous Observations
33. Issin	Djell	Fairly good pasturage.
34. Rellachem		Grows in the mountains, scarce, remedy for gonorrhea and cough.
35. Tahara	Hâdd	Cornulaca monacantha. Very good winter pasturage, poor in the summer.
36. Ana	Merkh	Ginista saharae, broom. Very good pasturage.
37. Tadjerdjert		Purgative. Fairly good pasturage.
38. Tahiart	Tinhart	In the seguias /irrigation canals/ of the agricultural centers, used to perfume tea.
39. Tahli	Berdi	Formium tenax. Type of large reed which grows near the tiggerts /natural outflows of water/; pasturage for goats. In times of scarcity, the heart is eaten.
40. Taïberou	Bouzaka	Poison, rare (Atakor). No antidote.
41. Tassa	Elbaguel	Mediocre pasturage.
42. Tanatfert	Ghatassa	Makes milk bitter.
43. Toulloult	Drinn	Aristida pugens. Very good pasturage, seed edible in same way as that of afazzou (three parts to one of wheat).
44. Teferiest	Tesskra	Thistle, scarce, good pasturage.
45. Takamezout	Chedengoura	Only in the Atakor. Sure cure for dysentery; yields 14 remedies.

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(137) Tamashek Name	Arabic Name	Miscellaneous Observations
824		
46. Zezeri	Zahta	Atakor. Is put in tea.
47. Tihéréguéli	Chih'	Perfumes tea, remedy for colic.
48. Amiou	N'gouth	Good pasturage.
49. Tamadjéhi	Kroumt	Very good pasturage.
50. Tatalt	Elgouzah	Good pasturage.
51. Otaq	Mrenza	Mixed with crushed dates, fattens women. Bad odor.
52. Tedjourt	Hallala	Remedy for gastric troubles.
53. Terfes	Terfes	A sort of truffle.
54. Aliouen	Denoun	A sort of large asparagus.

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VI

Tools

412 Here is a list of tools used by the maalmine; many of them are made by the users:

Tisadh: double-pocketed bellows.

Abaracha: piece of wood 50 x 20 x 6 centimeters, serving as support for an iron mass used as an anvil.

Tehount: iron mass 6 x 6 x 15 centimeters used as an anvil.

Afadis: hammer.

Tafadist: small hammer.

Irendan: tongs.

Takadimt: adz.

Tataout: chisel for wood. } Neolithic-type hafting.

Tadouft: ax.

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Fig. 21 a–b. Milk-bowls (*akas*, pl. *ikassen*) which are used for milking and for milk drinking.

[184] a. A bowl made of burned clay like an ordinary earthen pot. These bowls are never used by pastoral Tuareg but by a few sedentary agriculturists of Ahaggar who also manufacture them. Ahaggar, Tamanṛaset. Dimension: 0.120 m high with an upper diameter of 0.187 m. (N.M. G. 5821).

[824] [463] [184] b. A bowl cut of the wood of the *tabarekkat* tamarisk (*Tamarix aphylla*). It is made by a blacksmith, but certain Tuareg women cut similar bowls which are common in all camps of pastoral Northern Tuareg. Such milk-bowls are unknown among the Ayr Tuareg. Ahaggar, the *Aguh-en-tehlé* tribe. Dimension: 0.102 m high with an upper diameter of 0.199 m. (N.M. G. 5199).

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Fig. 22. Calabash of a type which is used occasionally for milking in Ahaggar. It is called *atekkas* (*wa n akh*) or *asekkas* (*wa n tazek*), that is "calabash for milk, or "calabash for milking". Introduced to Ahaggar from the south and bought at Tamanṛaset. Dimension: 0.110 m high with an upper diameter of 0.195–0.203 m. (N.M. G. 5823).

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p. 93 ff.), and this seems to be true partly also of the so-called Watusi-cattle and related breeds, which have been mixed with zebu-cattle and therefore frequently have well developed humps (cf. Adametz 1920, p. 10 ff.; Faulkner & Epstein 1957, p. 148 ff.; Johsi, McLaughlin & Phillips 1957, p. 146, 178, 259).

Adametz believes that zebus were introduced into Africa from Northern India about 2000 B.C. (Adametz 1920, p. 10 ff.). Nowadays Zebus no doubt form the most important types of cattle in Africa, and Tuareg cattle are of the zebu type. The West African zebus fall into a number of subbreeds described in detail by Doutressoulle. The zebu type found in Ayr and adjacent regions and also introduced into Northern Tuareg country is known as the *Azawar* breed (Doutressoulle 1947, p. 102 ff.). In Southern Ayr, which nowadays has a fairly large population of pastoral Fulani, a particular type of zebu is also very common. This zebu is characterized by very high stature and extremely long horns often resembling the form of a lyre (Fig. 27). This breed is named Borodji, Bororo, or M'Bororo. The Fulani zebu is esteemed by certain Ayr Tuareg because of its fatter milk, but it is claimed that its meat is not so delicious as that of their own cattle.

Pastoral Tuareg of Ahaggar and Tasilé-n-Ajjer do not breed cattle (zebus), which do not thrive in their barren countries where pastures of annual plants do not regenerate annually. An attempt to breed zebus among the pastoral Ahaggar Tuareg some years ago failed, and zebus are nowadays found only among settled agriculturists who use these animals as draught-animals at irrigation wells (p. 189; Fig. 132 a–b). A few agriculturists also have cows to raise calves, and to utilize their milk. It is comparatively easy for settled agriculturists of Ahaggar to keep cattle. In dry years, and when pasture is scarce and dry in the hot season, cattle can be fed on vegetables and the straw of certain plants grown in the garden. It can also be mentioned that many agriculturists live in the very broad river valleys of lower Ahaggar where water is not very deep under the sand, and at some agricultural settlements there are even permanent springs. In such places (e.g., the settlements of Abalessa and Amsel) there are even in dry years fresh grazing of a few permanent plants suited to cattle, notably the four following species:— *tahlé* (*Typha elephantina*), *tésengelt* (*Saccharum Ravennae*), *ilegga* (sing. *aleggi*) (*Scirpus Holoschoenus*), and *taysest* (*Eragrostis bipinnata*). The regeneration of these plants is not dependent upon annual rainfall, for the soil is always sufficiently humid for their annual regeneration. Therefore it is very common in Ahaggar (e.g., at Abalessa and at Amsel) to burn down the old dry plants late in winter so that new fresh plants can germinate in spring. This method of renewing pasture by the burning down of old dry plants is not generally possible in desert countries. In Ahaggar it is practised only for the four above mentioned species within very limited humid areas, and the method is said to be entirely unknown in Ayr.

The Ahaggar agriculturists who possess oxen very frequently use these animals for riding, sitting on the hind part of the animals which are kept under control by means of a rein (*tazerkit*) placed through their nostrils, or by means of a halter. No saddle is used apart from a casual piece of cotton, or a blanket (Fig. 28). In Tasilé-n-Ajjer, it is said, the settled farmers have no cows but only bulls and oxen to be used at irrigation wells, and these animals are not used for riding as in Ahaggar.

The zebus found in the settlements of northern agriculturists are all introduced from the south where conditions for ox-breeding are much more favourable. Many, and perhaps most, northern zebus have come from Ayr from which region they are still introduced to Ahaggar and Tasilé-n-Ajjer.

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yield decreases to about two litres (Doutressoulle 1947, p. 104). It should be added that, as for other domestic animals, the daily yield of milk depends very much on the conditions of pastures, and cows always yield little milk when pastures are dry – even at the beginning of their lactation period.

Bulls are frequently castrated two or three years old to be used for riding and transportation. Oxen are used for this purpose particularly among the Tuareg of the plains towards the south and west, while most pastoralists of the Massif almost exclusively use donkeys and camels. Oxen are ridden without a saddle. The rider sits on the back of the animal which is covered with a blanket or a piece of cotton as in Ahaggar. The animals have a cord (*asabar*) placed through their nostrils, but plaited halters (*amerar*) are also used for riding oxen.

The Tuareg have terms to cover the age and sex of their cattle, and they also have a certain number of colour terms; but they say that there are very few colour terms for cattle (about ten terms according to Tuareg of the *Kel Ferwan* group). They explain this lack of colour terms by the fact that cattle did not play any important rôle to their subsistence in the past. Cattle do not respond to their names, but some of them will come to the camp on the utterance of a certain cry (cf. p. 135).

Fig. 31. Zebu calf with a pronged stick (*tabellut*) put through its nostrils to prevent sucking. Ayr, the *Isakaranan* tribe.
Fig. 32. Muzzle (*akimbab*) to wean zebu calves. The muzzle is made of boughs of the *tamat* acacia (*Acacia flava*) which form a frame covered with cords of *tamat* bast and with cotton strips. It is fastened to the head of a calf with a piece of cord plaited of goat's hair, and the attachment is done in such a way that the calf can graze without difficulty though it cannot suck. Tamesna, Ahaggar Tuareg of the *Iregenaten* tribe. Dimension: 0.17–0.19 m high. (N. M. G. 6661).

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Fig. 37. Wooden milk-bowl (*akabar*) of the type used in Ayr not only for she-camels but also for cows, sheep, and goats. It is carved out of wood of the *tarza* tree (*tarha* in Ahaggar) (*Calotropis procera*) by a blacksmith. Ayr, the *Imezzureg* tribe. Dimension: 0.285 m high. (N.M. G. 6662).

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Fig. 38. Wooden milk-bowl (*akabar*) of the type used for she-camels in Ahaggar. It was introduced to Ahaggar from the south where it was made by an Ayr blacksmith from wood of the *tarha* tree (*Calotropis procera*). The cracked brim is mended with a piece of raw camel hide. Ahaggar, the *Ajjer-en-tehli* tribe. Dimension: 0.240 m high. (N.M. G. 5822).

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37–38) and milks only with one hand, but the milk-bowl may also be held by a woman or a boy so that both milkers have two hands free. If men are absent from the camp, milking may be done by women though properly this is the task of grown men. Certain she-camels are very difficult to milk so that milking should be done as quickly as possible. If a she-camel is very restless and therefore difficult to milk it is customary to bend up its right foreleg and attach it in this bent position to its left foreleg before milking is done. This method is known to the Ayr Tuareg by the term *ésemmetil* (cf. Fig. 35).

The Tuareg have various devices to prevent camel calves from drinking more than their proper share of milk. In Ayr and also among the Ahaggar Tuareg of the Tamesna region it is common to keep the young calves tethered by means of a particular cord (*téimdit*) fastened to the calf's forelegs (Fig. 39–40). The calf is not allowed to follow its mother during grazing, and in the night when all she-camels rest in the camp they are kept lying on the ground so that the calves cannot suck them. When young calves are tethered in the camp they are fed on fresh annual plants collected for them by the Tuareg. When calves grow older and plant food constitutes their most important nourishment,

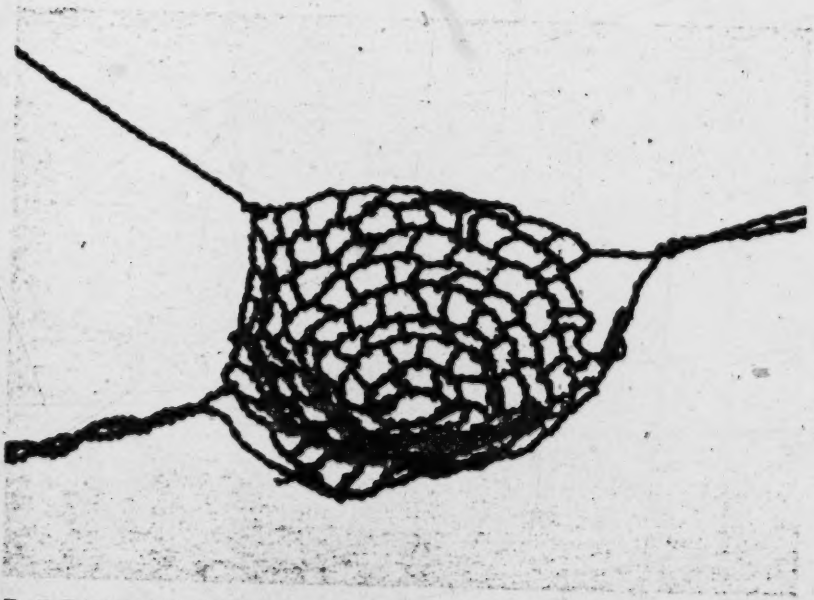

Fig. 41. Plaited pouch (*ebegu*) to prevent the sucking of camel calves. It is made of goat's hair, and it has three cords for attachment to the hind part of the she-camel so that the pouch covers the udder. Ahaggar, the *Aguh-en-tehlé* tribe. Dimension of the three cords: 1.19, 1.05, and 0.97 m. (N.M. G. 5198).

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

bridge of the nose of a calf, so that it hurts its mother when it tries to suck (Cauvet 1925, I, p. 359). – (3) *akimbah*, that is a plaited muzzle which allows the calf to graze, but prevents it from sucking. I have been told both in Ahaggar and Ayr that such muzzles are used for camel calves, but apparently they do not constitute a normal weaning method. – (4) *asrdres* or *amera* are said to be synonymous terms for the weaning method generally adopted among the *Kel Ferwan* Tuareg of Ayr. The method is as follows:— The upper lip of the calf is pierced on both sides of the harelip so characteristic of all camels. A piece of thin root of the *afagag* acacia (*Acacia Raddiana*) is drawn through these holes so that the ends of the root protude at both sides, and a knot is made at both ends that the root will not fall out. These knots hurt the udder of a she-camel when the calf starts to suck, but this is not the real idea of the device. For the root-piece keeps the pierced holes open and the calf is therefore unable to suck at all.

A she-camel may yield about ten litres of milk at the beginning of its lactation period, but at the end of this period it does not yield more than two or three litres even with good grazing. The yield is always dependent on grazing conditions. Thus during my stay in Ahnet and Ahaggar 1954–55, a Tuareg who owned about twenty she-camels acquired only two litres of milk a day in all from these animals. But conditions of camel-breeding are much better in Ayr and in the southern plains where she-camels are tolerably good milk-yielders most of the year, and camel's milk is therefore very important to some pastoralists of these regions. Camel's milk is drunk and not generally used for food in other ways. It is much esteemed by all Tuareg, who claim that it possesses a particular power and gives strength. It is never stored in the shape of butter or cheese. The Tuareg of Ahaggar and Ayr never eat camel's butter which they consider possesses a poor taste, and, besides, it is very difficult to churn. They make butter of camel's milk only when butter of milk from other domestic animals is lacking for the greasing of the hair. Both in Ahaggar and in Ayr butter is then churned by the men in a rather peculiar way:— A skin bag containing an amount of camel's milk is attached to the riding saddle of a camel which is then ridden at very fast speed for some time. But even with this method, it is said, camel's milk gives very little butter, and it is also definitely stated that the milk cannot be used for cheese-making. These Tuareg statements seem to be confirmed by analyses of veterinaries, who claim camel's milk to contain very little casein, and it has been proved difficult to separate butter from camel's milk (cf. Cauvet 1925, I, p. 707 ff.).

She-camels can mate and yield milk until an age of about 25, and their average length of life is estimated by the Tuareg at about 30 years. But pastoral Tuareg do not generally keep their camels until they die a natural death. In Ayr I was told that she-camels more than twenty years old should be sold or killed. Most Tuareg sell their old camels in the oases of the Central or Northern Sahara where a large population of sedentary farmers is constantly yearning for meat. Very few camels are killed by the butchers of Agadez, where meat from oxen, sheep, and goats is always available and fairly cheap, but a great many old camels are slaughtered at the market places of the oases further north.

Pastoral Tuareg of Ayr very rarely kill their own camels to eat them. They will slaughter a camel which suffers from some severe disease as all animals dying by accident or from disease are unlawful to eat. However, there are also some Ayr Tuareg who will never eat camel's meat. They say that they would feel very sick at heart were they to do so, and some Tuareg even say that they would vomit

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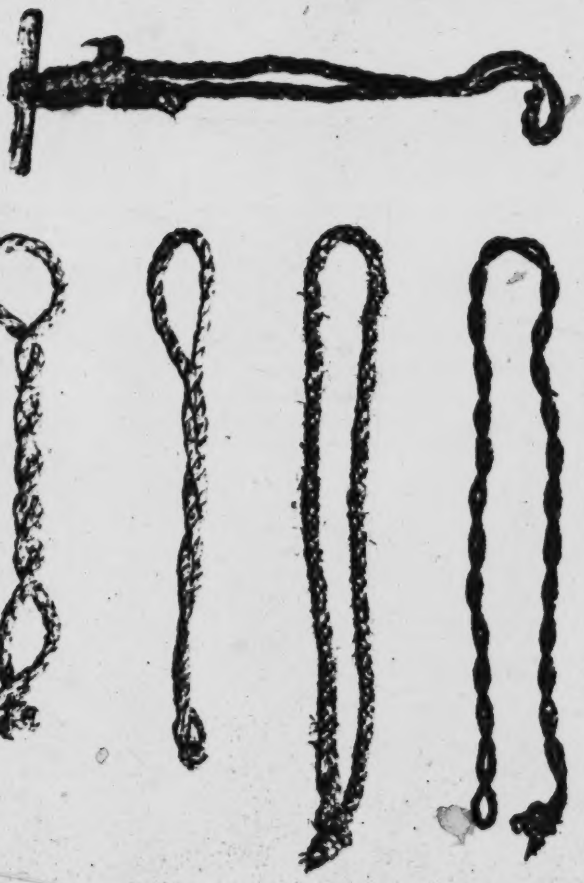

Fig. 45a–e. Hobble-ropes for camels.

a. The *aazyas* rope to be tied around the foreleg of a camel to keep it lying down. This rope is made of goat's hair. Ahaggar, the *Aǧuh-en-tehlé* tribe. Dimension of the stick 0.128 m (N.M. G. 5195).
b. Hobble-rope (*téffart*) made of dum palm leaves. Ayr, *Kel Farwan* Tuareg. Dimension: 0.43 m. (doubled). (N.M. G. 6609).
c. Hobble-rope (*téffart*) made of raw ox-hide. Ahaggar, the *Aǧuh-en-tehlé* tribe. Dimension: 1.03 m. (N.M. G. 5196).
d. Hobble-rope (*téffart*) newly-made of date palm bast. Ahaggar, Tamanrasset. Dimension: 0.60 m. (doubled). (N. M. G. 5197).
e. Hobble-rope (*téffart*) made of goat's hair. Ahaggar, the *Aǧuh-en-tehlé* tribe. Dimension: 1.16 m. (N.M. G. 5194).

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Fig. 46. A resting she-camel with the colour name *tawinak*. The colour term of the young she-camel standing in the back-ground is *ténilt*. Ayr, the *Imezzureg* tribe.

In Ayr the Tuareg do not 237
use camel's hide in their crafts, but give it to the blacksmiths who use it for lashing, or to people 564
who manufacture beds from ribs of palm leaves (cf. Fig. 257). The Northern Tuareg use camel-skin 352
for the manufacture of a few household implements and also use it for lashing (cf. p. 84, 110, 222, 824
270 f. & Figs. 70, 86, 132a–b, 161a–d, 162, 213). But even in Ahaggar and Tasilé-n-Ajjer the skin of camels is little used compared with the skin of goats, sheep, and barbary sheep.

When employed in craft, camel's hide is normally used raw and unprepared after soaking in water, 281
but the Ahaggar Tuareg say that for certain purposes the hide is treated with salt. In literature there 114
are many statements about the tanning of camel's hide. Thus it is stated by Cauvet that the hide is tanned with plant material in Algeria, and Cauvet also quotes Duveyrier's statement that the Northern Tuareg tan camel's hide to use it for tents and various other implements (Cauvet 1925–26, I, p. 714 ff.). I very much doubt the correctness of this, as all Tuareg asked about it have stated that the hide of camels is not fitted for proper tanning. Camel's hide is therefore of very limited use to the Tuareg, and the same is the case with camel's hair or wool. Tuareg camels in Ayr have very little wool, and 237
among the Northern Tuareg most animals have less wool than Arab camels of the Northern Sahara. The Northern Tuareg pluck a little wool with the hands or cut it off with a knife. It is spun into cords 283
to be used for certain minor objects, notably for the manufacture of the plaited pouch (*abegu*) to prevent the suckling of calves (p. 62, Fig. 41) and for the particular cord (*asayun*) tied around the foreleg of camels to keep them in a reclining position (p. 72, Fig. 45a). Mixed with goat's hair the wool is 286
also used for a kind of primitive weaving (p. 265 ff., Figs. 209a–b).

Camels are very important to the Tuareg as pack-animals for the caravan expeditions which will 492*
be mentioned in a later chapter when other means of subsistence have been described. 484

In the past camels were also extremely valuable as riding animals on raiding expeditions which 492*
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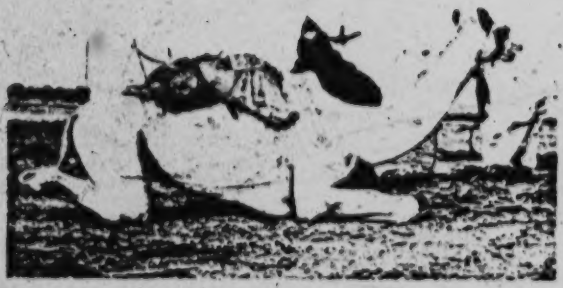

Fig. 53. Pack camel with the saddle consisting of two skin-bags (*imaytalen*) stuffed with hay. Ayr, the *Imezzureg* tribe. Fig. 54. A skin bag (*amaytal*, pl. *imaytalen*) of the type used for pack-saddle. Ayr, the *Imezzureg* tribe. Dimension: ca. 0.80 m. (N.M. G. 6658).

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leather fringes (cf. Fig. 52). Some very elaborate halters are found in the Musée de l'homme (Nos. 5.66.5; 30.61.228; 95.46.3; D $\frac{44}{4}$ 42; D $\frac{44}{4}$ 25).

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Foucauld describes a peculiar method for leading camels, as follows:— A little wooden stick (*aġula*) is stuck into the skin between the chin and the lower jaw of the animal, and the lead is attached to this stick. The method is practised with camels which have no nostril ring and cannot be led by means of a rope attached around their lower jaw (Foucauld 1951–52, I, p. 426). I have seen this peculiar method practised once in Ahaggar.

Pack-camels are rarely used without some type of saddle, but it happens that camels are used for water-transportation from the well to the camp without a saddle. The waterbags are then hung over the animal's back, their cords resting upon a layer of straw or sprays. In Ahaggar, and more so in Ayr, it is also common instead of a proper saddle to use two skin-bags filled with grain, straw, or the like to form cushions. One of these is placed before, the other behind the hump so that the cords of luggage bags can rest upon them (cf. Fig. 53–54). These cushions are known as *imaytalen* (sing. *amaytal*), and they may serve as a pack-saddle even on long journeys, though the Tuareg in general use proper saddles on trading expeditions.

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Pack-saddles of the Northern Tuareg correspond to saddles found among the Arabs of the Sahara. The common type is that known to the Arabs as *ḥawiyya* or *ḥidǧǧe*, and called *ɛlaki* by the Northern Tuareg. It consists of a wooden frame (*ɛlaki*) generally made from pieces of palm leaf ribs (Fig. 55). It is made up of two crossbars placed close to each other, each of them being composed of two short and slightly curved pieces of palm leaves' ribs lashed together at the top with raw camel-hide. The

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pair of cross-bars is connected with four short sticks of the same material, each being lashed with hide horizontally to the crossbars. This frame is generally manufactured by sedentary agriculturists of Tidikelt, who also make the large cushion (*tihekam*) of date palm bast to which the saddle-frame is attached with cords. On rare occasions the Tuareg also have saddle-frames of wood (*taharekkat*, that is *Tamarix aphylla*) made by the blacksmiths on the same pattern, and they may also use cushions of hay stuffed into a piece of matting. The *élaki*-saddle is used in the following way:— The short, looped cords of the loading bags rest upon the wooden frame in front of the camel's hump and on the rear part of the saddle-cushion. A bunch of grass or date palm bast (*aselki*) is placed under the loading cords that they may not gall the back of the camel. In addition to the proper camel-load divided into two halves (e.g., two large bags) there are frequently many smaller objects to be transported, and these are then attached to the wooden saddle-frame. The *élaki*-saddle normally rests loosely upon the camel's back, but it may be fixed to the animal's back by a girth (*ahayif*). It is also occasionally

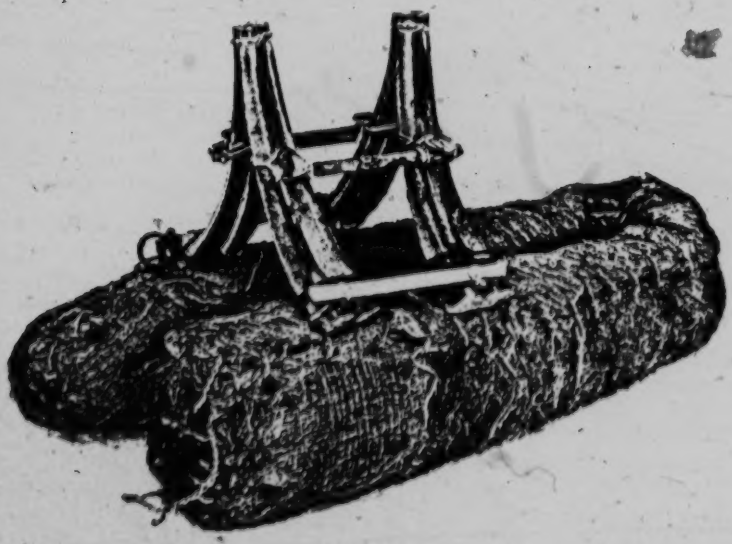

Fig. 55. The *élaki* pack saddle consisting of a saddle frame attached to a U-formed cushion made of date palm bast: The saddle frame made of palm fronds lashed with raw hide. It is called *élaki*, or *ervas en élaki*. Ahaggar, Tamanrasset. Dimension: 0.34 m high. (F.M. 191).
The saddle cushion of date palm bast. It is called *tihekam*. Ahaggar, Tamanrasset. Dimension: 1.50 m long. (F.M. 192).

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Fig. 63a. Riding saddle of the *tehyast* type. The saddle is made of wood of the *tarha* tree (*Calotropis procera*) which is often used for riding saddles. The wooden frame is lashed with strips of raw hide and covered with depilated ox-hide which is coloured with the dyes known as *berki*, *temsterank*, and *tawakeni* (cf. p. 282). Bought in Ahaggar, manufactured in Adyar-n-Foyas, or in Ayr. Dimension: 0.55 m high, 0.51 m broad. (N.M. G. 5189).

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that it is manufactured by pastoral Tuareg of these regions and not by blacksmiths, though the latter may also make such saddles for their own use. The wooden structure is made of two cross-bars, which are natural prongs fashioned with knife and axe, and these two cross-bars are lashed to each other at their lower ends, or are connected with each other by means of two sticks crossing each other at the two sides. A wreath of slender roots of *afagag* (*Acacia Raddiana*) covered with a network of dum palm rope may serve as a saddle seat, which can also be covered with a piece of matting plaited from the leaves of the dum palm tree. This very simple saddle may perhaps be considered the prototype of the more developed riding saddles of the *térik* and *tahyast* types.

All the above-mentioned types of riding saddles are placed in front of the camel's hump and rest upon two to four saddle cloths, the number depending upon their quality and also upon the nutritional condition of the animal. Two saddle-cloths are considered enough for a fat camel while four should be applied to a very thin one. Saddle cloths are frequently called *ésaïfar* (Ayr) or *aseïfer* (Ahaggar), but this name is in fact used for everything placed upon the back of an animal to protect it against galling from the luggage and/or the saddle. Saddle cloths for camels are properly termed *éselis* (Ayr) and *ameslaḳ* (Ahaggar). Both among the Northern Tuareg and in Ayr saddle cloths are generally made of cotton, but they are also made from dum palm matting and a piece of leather among the Ayr Tuareg (Figs. 66–67). The riding saddles are fixed to the camel by a single girth known as *ahayif* (Ahaggar) or *azaw* (Ayr). In the north such girths are normally made from goat-hair while the Ayr Tuareg use plaited leather (goat-skin). Girths in both regions are frequently furnished with a very large tassel hanging down from the right side of the camel (Fig. 69). On rare occasions when the Tuareg ride their camels with all possible speed, e.g., at the annual camel races organized by the French administration, the riders often secure the position of their saddles by means of a long cord (*ihwéweren* among the Northern Tuareg) tied around the hind part of the camel as shown by the photograph Fig. 68.

The camel rider sits in the saddle cross-legged with his feet resting upon the camel's neck. To accelerate the speed of his riding animal he pushes one of his feet against its neck in step with the rocking gait peculiar to camels. A whip (*alekkaḍ*) also belongs to the equipment of the rider. Most whips have a single lash made from a twisted strip of hide, but whips provided with two lashes of hide attached to a wooden handle are also found and are common in Tasilé-n-Ajjer (Figs. 70a–b). The whips used in the north are said to be made from camel's hide soaked in water; the raw hide is twisted and kept in this position until it is dry. The Ayr Tuareg say that camel's hide is not well fitted for whips, which among them are manufactured from the raw hide of a newly-killed ox. A piece of this hide is twisted and left to dry as in the north. The handle of the one-lash whip is made of cotton wrapped around the upper part of the lash and covered with coloured goat-skin.

The Ahaggar Tuareg have a particular implement to hasten the speed of riding camels. It is described in literature notably by Foucauld. It consists of a slender iron rod 0.35–0.50 metres long, fixed into a wooden handle. It has a small crook much like that of a staple and is used for scratching the animal and thus to incite it to greater speed. It is called *azalla*, or *aseḳreḍ* (Foucauld 1951 52. II. p. 856 & IV. p. 1960). I have never seen this peculiar implement among the Tuareg.

A camel rider's equipment comprises various types of skin bags of which the most common is a

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Fig. 64. Riding saddle of the type known as *kantarki* or *delobi*. It is made of two forked boughs of *tamat* acacia (*Acacia flava*) connected with sticks and the seat. The latter is made of slender roots (sing. *tdkdwt*) of the afagag *acacia* (*Acacia Raddiana*). These slender roots are bent into a circle, are covered with cotton or similar material, and a kind of net is made of dum palm rope within the circle. Ayr, *Imeggedrezn*. Dimension: 0.49 m high. (N.M. G. 6656).

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household goods during nomadic migrations, and are employed daily in all camps to carry water in skin-bags from wells and waterholes to the tents. They are very strong animals considering their low stature, and good pack-donkeys can carry up to one hundred kilograms even for very long trips. Donkeys are occasionally used for long journeys by the Northern Tuareg, and many Ayr Tuareg use them to fetch provisions of millet around Tanut in Dumergu. Caravans of donkeys are frequently observed in these regions, and one even sees mixed caravans of donkeys and camels. There can be no doubt that before the introduction of the camel the donkey was still more important for riding and transportation than is the case nowadays. This is clearly demonstrated by historical material from Egypt and adjacent regions (cf. Erman 1922, p. 518 f., 529, 592 f., 636).

It has already been mentioned that donkey's meat and skin are not utilized nowadays by the Tuareg. The same is true of mare's milk which, however, is used as a remedy against a kind of cough known to the Ayr Tuareg as *khamkham*. There is no regulation of mating for donkeys which in many ways are semi-domesticated animals. In Ayr male donkeys are never castrated, while the Ahaggar Tuareg say they castrate such stallions as constantly run after the mares and in this way cause too much trouble. The Tuareg also have no methods to prevent foals from sucking, while a method of this kind is sometimes applied by sedentary people in and around Agadez. This method known as *éfinjar* consists in the cutting of the nostrils of half-grown foals so that they cannot suck pregnant mares. Both stallions and mares are used for riding and transportation, but female animals are much preferred for these purposes. Mares are used almost exclusively for the transportation of water-bags hanging under the animals, as the bags might be squirted by stallions' urine.

The Northern Tuareg saddle their donkeys, using the same saddle type for riding and for transportation (Fig. 86). This is known as *aruku* and is manufactured by the women in the following way:— Two fresh boughs of the *tahunek*-tree (*Rhus oxyacantha*) are heated, or slightly burned, over the fire. The boughs are thereupon barked and bent into the curved form wanted, and are then kept in this position by cords. After drying for a few days the boughs will retain their curved form, and the cords are untied. The boughs are then cut up and their ends are connected by two pieces of camel's hide soaked in water, and sewn together by means of a large iron needle (*tasugla*, or *tasubla*) (cf. Fig. 220b) and a thread which is also cut from camel's hide. The wooden saddle frame is attached to three cushions. These cushions are generally made of goat-skin or sheep-skin stuffed with hay or with date palm bast, but may also be plaited from leaves of the date palm tree. Cushions made from goat-skin are sewn together with strips of the same material by means of the little awl known as *tistent* (cf. Fig. 218a). The two long cushions resting lengthwise upon the animals back are known as *tastek*, and the small cushion resting over the animal's back close to its shoulders is called *tafelledut*. The saddle is fixed to the donkey by two girths consisting of cords made of goat-hair. One of these cords (*tishmechart*) passes under the tail, the other (*ahayif*) is tied around the chest of the animal. This saddle type is well fitted for the transportation of burdens and in particular of water-bags, the cords of which are attached to the pommels. When the saddle is used for riding it is frequently covered with a blanket or a piece of cloth. Saddles of this type are found in all camps of the Northern Tuareg, and Lhote states that they are also found in Adrar-n-Foras and in Ayr (Lhote 1947a, p. 120). This may be so, but I have myself never seen them in the latter region where they are unknown to the *Kel Ferwan*

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A chest disease for which the Ayr Tuareg have no particular name. It is cured by cutting two rows of small slices through the animal's skin at both sides of the fore thighs so that blood flows.

awaras, that is swelling of the foot caused by an acacia-thorn or other pointed object. The remedy is to remove the thorn by means of knife and awl and then burn the upper side of the foot with a red-hot iron.

tafadé, that is wounds on the camel's back caused by galling of the saddle and the loads. Very many camels have such wounds which are treated by pressing out the pus, by cutting, and by burning.

ajawad, that is scabies (*Sarcoptes scabiei* var. *Camelí*) which is extremely common. The Tuareg living around Agadez treat it in two distinct ways:— (1) an animal bone is crushed in a large mortar and the pounded mass is put into a cooking pot to be heated over the fire. A black liquid with a consistency like that of liquid butter comes out of the bone-substance after heating. It is rubbed into the skin of the infected animal. (2) Fruit of the *aborak* tree (*Balanites aegyptiaca*) are put into a cooking pot to be heated over the fire. A black liquid comes out of the fruits after heating. This is rubbed into the skin.

Camels in Africa are considered to suffer from only three major infectious diseases (*anthrax*, *pasteurellosis*, *trypanosomiasis*), but several types of local infections can be met with.

I believe that camel diseases of Ayr and Ahaggar are not very different, but I have not collected much material on the subject in the north. I give a few additional examples from Ahaggar: *adder*, that is a bunion close to the junction of leg and body of camels. The bunion is produced by rubbing of the fore thigh against the chest during walking, and some camels suffer from such bunions during long journeys. I do not know if there is any treatment for it. *ɣelek*, that is the swelling of camels which have drunk too much water after the consumption of salty plants; this swelling disappears by itself. *ɣrelenɣwahen*, a nose disease which attack camels and goats. The nostrils are filled with pus so that the animals have difficulty in breathing. The treatment is burning. *amerwas*, swelling of the feet which are washed with hot water. *taza*, a chest disease considered contagious. The animals lose their appetite. The remedy is burning. Dr. Grunnet thinks that it could be an oedematous form of *pasteurellosis* (*haemorrhagic septicaemia*). – For scabies the Ahaggar Tuareg seem to know several treatments. They use pounded leaves of *ahoyyar* (*Cleome arabica*) and of *telulut* (*Capparis spinosa*) added to sour milk and rubbed into the camel's skin. According to Maire, who has made use of information from Voinot, there are other treatments for scabies, namely the use of ashes of the *aferegak* plant (*Chrozophora Brocchiana*), tar extracted from the *azawa* tree (*Tamarix gallica* ssp. *nilotica*), charcoal of *turha* (*Calotropis procera*) which is pounded and mixed with butter, seeds of *teɣellet* (*Colocynthis vulgaris*) which are boiled into a black oil called *akaha* (cf. Maire 1933, p. 145, 156, 172, 200). Congestion due to heat-apoplexy (*ahni*) is cured as mentioned in the case of the Ayr Tuareg.

From the above description of camel diseases and their treatment it will be seen that the Tuareg know several types of veterinary methods. In brief the veterinary techniques can be summarized under the following five items:—

(1) Treatment by the hand, e.g., *Corpus luteum* which is squeezed out of the ovary by the manipulation (cf. *sanes*, p. 120), and massage treatments which the Tuareg practise with human beings and with domestic animals.

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Fig. 94. Tuareg operating a camel's foreleg with a knife. Northern Ayr, the *Kel Tédalé*.

492 from the constant friction against the sand, and it may become necessary to provide the animals with leather shoes, that is pieces of ox-skin sewn around the hoofs. These leather shoes are known to [113] the Ahaggar Tuareg as *tissal* (sing. *tasselt*). Their appearance is excellently depicted by Lhote (Lhote 1951b, photographs p. 224).

232 824 (5) Medical treatment which forms an important part of Tuareg veterinary knowledge. I have mentioned in the description of camel diseases the use of certain plants for the external treatment of scabies. The Tuareg also use various plants for drugs. Seeds of certain annual plants are mixed with milk and given to goats and sheep which suffer from stomach-diseases. Leaves of various plants are also considered laxatives. The Tuareg know many drugs made from wild plants, and they are aware that there are several wild plants that are dangerous to domestic animals. A very dangerous venomous plant is *élel* (*Nerium oleander*) which is extremely common in the higher parts of Ahaggar. It contains a kind of strychnine, and camels which eat *Nerium* leaves will die from this poison. The Tuareg say that camels bred and born in Ahaggar know the plant to be dangerous. These camels do not eat the *Nerium* leaves but others introduced to Ahaggar from the south may do so. To prevent camels from eating *Nerium* leaves the Tuareg put a leaf of the plant into their nostrils, or burn *Nerium* leaves so that the smoke and the scent of the plant enter the animal's nostrils. In this way camels come to loathe it. There are, according to Foucauld, other venomous plants in Ahaggar, e.g. *awrhed* (*Perralderia coronopifolia*), *arenked* (*Leptadenia heterophylla*, and/or *Cocculus pendulus*) which are fatal to goats and sheep (cf. Foucauld 1951–52, III, p. 1524 & IV, p. 1647; Maire 1933, p. 230, 236). The species [682] known to the Ahaggar Tuareg as *éfelehleh* (*Hyoscyamus muticus* ssp. *falezlez*) is very venomous for human beings, and in the past was used by the Tuareg to poison their enemies.

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human beings, and in the past was used by the Tuareg to poison their enemies. However, this plant does not seem to be venomous for domestic animals which grow fat from eating it (cf. Maire 1933, p. 192). One plant (*itheréggelé*) (*Artemisia judaica*) is said to have an intermediate position: When camels eat its green shoots they may contract entrail diseases, but the plant is also considered a remedy for entrail worms. Domestic animals which have eaten venomous plants are generally treated with liquid butter which is poured into their mouths. Venomous animals are also very dangerous for domestic animals, notably scorpions and snakes which abound everywhere. The treatment of swollen limbs caused by snake bites or scorpion stings is sometimes bleeding, but the Northern Tuareg also consider it effective to give the affected animal fat from a female barbary sheep and to place a little fat over the place where the animal has been bitten or stung. Under this heading of veterinary medicine mention must finally be made of the fact that tobacco is considered to possess curative qualities in the case of certain diseases. When camels get tired and slow owing to congestion during the hot summer season the Tuareg consider it an excellent remedy to put, as mentioned above, powdered tobacco leaves in the animals' eyes. This was frequently practised with my own camels, and it seems to me that the method is efficacious.

It is evident that many veterinary methods among those mentioned above are effective, and I believe that Tuareg veterinary methods are largely to be considered rational. It is a true that it is most difficult for an anthropologist without any veterinary training to judge objectively the value of all treatments of stock-diseases. But French veterinary surgeons I consulted at Agadez held the view that the Tuareg methods they knew of were effective, though in specific cases of disease they could do better than the Tuareg, and one veterinary surgeon admitted that the Tuareg knew far more about camel-diseases than did modern veterinaries. It can be added that the Tuareg possess an anatomical knowledge of their animals which is no less than astonishing. Apoggi has noted 43 terms used by the Tuareg of Tasilé-n-Ajjer to describe the exterior parts of a camel (Apoggi 1933), and this list is not complete. It goes without saying that the Tuareg also have a large vocabulary for internal organs which they know in detail from slaughtering. And I believe they have a fairly good knowledge of physiology.

I have elsewhere given some information of Tuareg medical methods applied to human beings (Nicolaisen 1961; cf. also Humann 1933), and I have stated that Tuareg medicine cannot be understood entirely without reference to religious and magic beliefs. This is to some extent also true of their veterinary methods. But as far as I know there are many medical methods based on magic and religious ideas which are applied solely to human beings. This may seem quite natural.

Domestic animals may run the risk of being attacked by evil forces such as the evil eye and the evil mouth (*tehot* in Ahaggar; *tugarchet* in Ayr), the *Kel Asuf* spirits, and the mystic power known as *allama* or *tezma* in Ayr (cf. p. 21), and valuable animals may carry Islamic amulets as a protection against these evils. I have seen such amulets carried by a few rams and he-goats, but they are used particularly for camels, and I believe that most camel amulets are meant to protect the animals from the evil eye (the evil mouth). Against this malignant force camels may also be provided with a donkey's hoof hung around the neck as an amulet. Another non-Islamic amulette is used for riding camels in Ayr:— Some Tuareg of this region hang the foot of a turtle around the camel's neck in order that their riding animal may not stumble.

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Fig. 93. A Tuareg feeding his riding camel with *afezu* grass (*Panicum turgidum*). Many Tuareg feed their riding animals with stems of this perennial grass – partly to obtain a docile camel for riding, partly to change its fodder which consists largely of acacias and annual plants. The photograph is taken near Agadez at the *akasa* season. Annual plants grow between trees and bushes (*afagag*, *Acacia Raddiana*; *ibezgin*, *Salvadora persica*; *tadent*, *Boscia senegalensis*). Ayr, the *Isakaranan* tribe.

than those mentioned. Thus they can use any kind of receptacle for milk and milking, and they do not clean their milk-bowls with urine as is normal among certain East African stock-breeders, and, perhaps, also among certain of the Fulani living south of Ayr. The taste of urine is detested by the Tuareg, who know this taste all too well as the water drawn from pools and wells is frequently flavoured with urine and the excrement of domestic animals. Nor is camel urine used by Tuareg women for hairdressing as is done among the Arabs, but it is said that it may have a medical value in curing wounds. The custom of drinking blood has been mentioned above (p. 122 f.) and will be described later (p. 235).

The Tuareg apparently have comparatively few superstitious usages in stock-breeding, which is mainly to be considered rational. We have seen that stock-breeding is adapted to environment, and we have also mentioned that there are veterinary methods which doubtless have their origin in considerable knowledge of the anatomy and physiology of domestic animals. This knowledge forms one corner-stone of rational stock-breeding, and another is the very detailed knowledge of botany. In Ahaggar there are more than 600 different plant species for which the Tuareg have particular names, though a few related species are sometimes known by one and the same name. Every Tuareg know about the ecological conditions of these plants, and he knows exactly their fodder value for domestic animals. He knows that certain plants form excellent fodder for all domestic animals, but he is also well aware that the different types of stock have different needs, so that certain plant species are valuable for camels, other species for other domestic animals.

The Tuareg are occasionally cruel to donkeys, and to dogs, but they take the greatest care of all other domestic animals to ensure their wellbeing and reproduction. Women bring acacia pods or tender annual plants to kids, lambs, and calves, and to sick animals which remain in the camp. On long trading expeditions, when the camels have little time for grazing, some Tuareg will walk along

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the caravan and feed the animals with annual grasses, and a camel-rider, when he meets plants considered excellent for fodder, will stop for a while to let his riding camel eat them.

Saliferous plants are highly important to all types of livestock, and camels and sheep in particular need much salt nourishment. In Ahaggar there are certain plants of this kind almost everywhere, and the following species serve as fodder:— *aramas* (*Atriplex Halimus*), *issin* (*Salsola foetida*), *tabarekkat* (*Tamarix aphylla*), and *azawa* (*Tamarix gallica* and related species). *Aramas* in particular is very important. It is found almost everywhere within the Ahaggar Massif and at all altitudes. Benhazera states that *aramas* forms the most important fodder plant of Ahaggar (Benhazera 1908, p. 65), but this is not quite correct. It is most important because of its salt content as domestic animals do not thrive without salt, but the saliferous plants mentioned are very little nourishing for most domestic animals, and if the animals constantly eat such plants they become very thin. The most nourishing fodder plants of Ahaggar are tender annual species which spring up after abundant rainfalls. These plants are collectively known to the Ahaggar Tuareg as *akasa*; they comprise many different species and those considered most excellent for fodder are: *tageruft* (*Tribulus terrester*), *adreylal* (*Astragalus* sp.), *taynast* (*Echium humile*), *azren* (*Monsonia heliotropioides* & *M. nivea*), *tamaghé* (*Moricandia arvensis*), and *tawesmimt* (*Rumex vesicarius* & *R. roseus*). To these annual fodder plants can be added another important annual species, namely *alwat* (*Schouwia purpurea* ssp. *Schimperi*) which grows in the lower parts of Northern Tuareg countries. It is apparently not so common and important to the Northern Tuareg who live in and around the mountainous massifs, though it is a common and very valuable fodder for domestic animals of the Ahaggar Tuareg who live towards the south in the plains of Tamesna. It is one of the best fodder plants for camels and is also fairly good for sheep, while less valuable for other types of livestock. Annual plants may germinate over a large part of the year in Ahaggar, but as rainfall is most common late in summer (June, July, August) the best annual pasture will spring up at this period, and under very favourable conditions the plants may keep fresh and green for up to four months. When annual plants wither they are known to the Ahaggar Tuareg as *jurat* (*jurat n akasa*). Such dry annual plants have lost much of their fodder value, but they are important for fodder even at this stage. The perennial species which are most important for fodder have their optimal value at particular stages of their development at particular seasons. Important are the perennial grasses known to the Tuareg as *tulluli* (*Aristida pungens*) and *afezu* (*Panicum turgidum*). The *tulluli* grass is extremely common in the Northern Sahara, and it forms perhaps the basic fodder plant among the Tuareg of Tasilé-n-Ajjer. It is also common in Ahnet and in the other mountain massifs surrounding Ahaggar to the north, but it is not found in the mountain massif proper of Ahaggar where most Tuareg live. The grass grows at Abalessa where cattle, goats, and sheep of the sedentary farmers feed upon it. The *tulluli* grass is valuable when green in winter, and hay of this grass is used for camel fodder on caravan expeditions to Tidikelt. The Tuareg cut it with a sickle and take it with them on the journey to the northern oases, because there is normally little vegetation on the road and no pasture around the oases where the Tuareg remain to trade for several days. The *afezu* grass is extremely common in the lower parts of Ahaggar and is found in practically all river valleys. It is valuable for fodder when green after rain, but it is of little value when withered. There are other perennial herbs and grasses which are eaten by domestic animals, but herbs and grasses are

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not the most important perennial fodder plants for goats and camels as the very best fodder plants of this kind are acacia trees, notably the species of *tamat* (*Acacia seyal*) and *abser* (*Acacia Raddiana*), which are, perhaps, the most common trees in the lower parts of the Ahaggar Massif. In Ahaggar the acacias defoliate in winter, and they are then not very nourishing fodder, though they do not apparently loose all leaves at one and the same time. Very nourishing are the fruits or pods of the two acacia species mentioned. They are eaten by all domestic animals.

The most valuable fodder plants in Ahaggar consist of annual plants and the acacias, with the addition of saliferous plants. The tender annual plants are those considered most nourishing for animals. The annual plants may spring up everywhere at all altitudes, but the three vegetational zones of Ahaggar do not possess exactly the same species, and there are still greater distinctions between the perennial species found within these zones, which as fodder areas have the following main characteristics:—

(1) *Abada*

Annual fodder-plants	*tageruft* (*Tribulus terrester*)
	taynast (*Echium humile*)
	adreylal (*Astragalus* sp.)
Perennial fodder-plants	*tulluli* (*Aristida pungens*)
	afezu (*Panicum turgidum*)
	abser (*Acacia Raddiana*)
	tamat (*Acacia seyal*)
Saliferous plants	*aramas* (*Atriplex Halimus*)
	issin (*Salsola foetida*)
	tabarekkat (*Tamarix aphylla*)
	azawa (*Tamarix gallica* and related species)

(2) *Tarayin*

Annual fodder-plants	*tageruft* (*Tribulus terrester*)
	taynast (*Echium humile*)
	tamaghé (*Moricandia arvensis*)
	azren (*Monsonia heliotropioides* & *M. nivea*)
Perennial fodder-plants	*afezu* (*Panicum turgidum*) Scarce
	abser (*Acacia Raddiana*) –
	tamat (*Acacia seyal*) –
Saliferous plants	*aramas* (*Atriplex Halimus*)
	azawa (*Tamarix gallica* and related species)

(3) *Atakor*

Annual fodder-plants	*tageruft* (*Tribulus terrester*)
	tamaghé (*Moricandia arvensis*)
	tanesmimt (*Rumex vesicarius* & *R. roseus*)
Perennial fodder-plants	They are scarce and of little value
Saliferous plants	*aramas* (*Atriplex Halimus*)

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Each of the three vegetational zones of Ahaggar has its advantages and disadvantages. If we consider a good year when rain has fallen abundantly with a resultant regeneration of all fodder plants, the *Atakor* zone has very excellent pasture. For the plains and the stony mountain slopes are then entirely covered with annual plants which by the Tuareg are considered the very best fodder. The Tuareg also claim that the upper mountain zone is preferable because of its cooler climate, which has a beneficial influence on the lactation of domestic animals. The disadvantage of the *Atakor* zone is the lack of acacias to which can be added the scarcity of fuel. The *Tarayin* zone possess characteristics of the *Atakor* zone and of the *Abada* zone. The *Abada* country is botanically very different from *Atakor*. It has annual pastures of great value when abundant rainfall has been experimented and it also has valuable pastures of perennial plants. With heavy rain the *Abada* country is excellent for stock-breeding, and fuel can be found everywhere. But the Abada country is hotter than are the zones of *Tarayin* and *Atakor*.

If rain falls abundantly all over Ahaggar there is good pasture in all three zones. But rainfall is more frequent and heavier at high altitudes than in the *Abada* zone, so that *Atakor* normally has by far the best pasture of annual plants which spring up late in summer or in autumn. The *Abada* zone on the other hand has the very best pasture of perennial plants, notably acacias that grow around the lower parts of the valleys which are always flooded when it rains in the high mountains.

The fluctuations of plant development determine the nomadic migrations of the Ahaggar Tuareg. A few tribes have their normal grazing grounds in *Atakor* (e.g., the *Dag Rali* and the *Kel Tazulet*). They camp in this zone at most seasons to let their goats and sheep feed on fresh and dry annual pasture. In dry years and during the hot summer season they may move to the *Tarayin* zone where there are perennial fodder plants, but they rarely camp in the *Abada* country. Many tribes have their normal grazing grounds in the *Abada* zone (e.g., the *Aguh-en-tehlé*, the *Ayt Lowayen*, the *Iheyawen Hauka*, and the *Kel Rela*), but move to the *Atakor* when annual pasture is good in this region. They live in *Atakor* with tents and flocks when annual plants are green, while the rest of the year they camp in the *Abada* country to let their animals feed on acacias and other perennial species. Finally there are two tribes (*Tégehé-n-Efis* and *Iklan-en-tawsit*), the members of which camp in the *Abada* country all the year round even when rich annual pasture is found in *Atakor*. However, members of these tribes may send their camel herds to the *Atakor* zone, accompanied by herdsmen, while tents and flocks remain in the lower country.

With the exception of a few noble households which keep up their old tradition to subsist largely on camel's milk, the Ahaggar Tuareg do not keep their she-camels in Ahaggar unless there are excellent pastures of annual plants in this area. They take their camels to pastures far away from Ahaggar, notably to the Tamesna region where they have their animals guarded by herdsmen who are frequently slaves. In very dry years there are very few camels in Ahaggar – just the animals needed for riding and transportation. It is in fact very easy to take camels to distant pastures, and it is most necessary to give these animals the utmost care as they are most valuable and their breeding is a very slow process (cf. p. 56). Goats do not need such excellent fodder as do camels. They can eat almost everything, but in dry years goats may also suffer severely from lack of suitable fodder. This was the case in the year 1954/55 when I stayed in Ahnet and in Ahaggar. In the small camps of three to four tents each it was

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abundantly in one year than another there has always been rain enough to allow the annual pastures to spring up.

In Ayr there are three species of trees or bushes which remain green all the year round, viz. *ébezgin* (*Salvadora persica*), *tadent* (*Boscia senegalensis*), and *turza* (*Calotropis procera*). They are extremely common, and the two first species play a certain role for fodder during the hot and dry summer season (*ewilen*), but dry annual plants then constitute the best fodder for all domestic animals. The annual plants comprise various species; around Agadez they are mainly grasses, but the small thorny seed-plant *ageruf* (*Tribulus terrester*) is also very important. These tender plants spring up shortly after the rains but they wither even before rainfall stops at the beginning of the *rarat* season. The perennial fodder plants are of little value in the hot season. The *afezu* grass (*Panicum turgidum*), which is extremely common everywhere, germinates at the beginning of the rains and is dry and contains little nourishment in summer. Acacias form very important fodder plants for camels and goats, but they are also of little value at this season when they defoliate. The two most important acacias are *afagag* (*absor* in Ahaggar) (*Acacia Raddiana*) and *tamat* (*Acacia flava*). The *afagag* acacia germinates shortly after the first rains (*akasa*) and has its highest fodder value in the season of *rarat* when the fruit pods fall to the ground providing excellent fodder for all domestic animals. The *tamat*-acacia starts germinating somewhat later and its fruit pods, which are equally important for fodder, do not fall until the beginning of the season known as *tabsit*, at which period the fruit pods of the *agar* tree (*Maerua crassifolia*) also fall. For southern Ayr it can be said that grazing conditions are tolerably good most of the year. They are extremely good when annual plants are green during the period of *akasa*, and they are bad in summer (*ewilen*) when the lactation of domestic animals is low.

Grazing conditions within the Ayr Massif are much more favourable than in Ahaggar, but one thing is lacking:— There are very few saliferous plants. Thus, for instance, there are very few tamarisks (*temeyut* = *Tamarix aphylla*; *azawa* = *Tamarix gallica*), which are found only within limited areas of the Massif; species of *Salsola* are very rare, and the very important saliferous plant, known to the Northern Tuareg as *aramas* (*Atriplex Halimus*), is not found within the Massif. The Ayr Tuareg therefore have to feed their animals with salty earth which can be dug in certain parts of Ayr, or with Bilma salt, which plays an enormous part for most stock-breeders of Ayr and adjacent regions. The Ayr Tuareg cannot so easily take their flocks and herds to salt pastures as can the Northern Tuareg. But there is south and southwest of the Ayr Massif a narrow belt of salt-containing soil and water. This region is known to the Tuareg as *Azawar* because of its particular reddish soil. With this particular type of soil, well water and pools will contain some salt, as do most plants, and many Tuareg of the Ayr Massif migrate to the *Azawar* country at the end of the rains to allow their animals to benefit from the salt-content of the water and plants there. There is another reason why some Ayr Tuareg, who have their normal grazing areas within the Massif, migrate south and westwards into the plains, namely the appearance in these regions of a small annual plant known as *emchéken* (*Ipomoea verticillata*). The Ayr Tuareg consider it one of the very best fodder plants for camels, goats, and sheep, but claim it to be less valuable for cattle and donkeys. – At the end of the rains the Ayr Tuareg who migrate to the *Azawar* country camp among pastoralists of different and distant regions. At this season most *Kel Gerres* Tuareg migrate northwards to camp around Tegidda-n-edrar and Tegidda-n-

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221 *233 ●824 tagayt, while the *Iwllemmeden Kel Dennek* at this period will camp around Ingal. Many Southern Tuareg leave the savannah country to avoid its heavy rainfalls and stock-diseases to let their animals benefit from the salty water and plants in the *Azawaɣ* country.

133 162 137 In the country west of the Ayr Massif, the Tamesna Plains, there is in addition to the Ayr Tuareg a numerous population of Ahaggar Tuareg who live constantly in these regions. These plains are botanically different from the mountains. Perennial vegetation is scarce though there are some *tamat*-acacias (*Acacia flava*), but there is a very rich vegetation of annual plants of great importance to *233 domestic animals. Among these plants can be mentioned *alwat* (*Schouwia purpurea* ssp. *Schimperi*), 824 which is very valuable for camels and also good for sheep, *adreylal* (*Astragalus Vogelii*), and *tagellet* (*Colocynthis vulgaris*). The two latter plants are valuable as fodder for all domestic animals. It is noteworthy that these three species of annual plants last longer than other annual species. They do not wither at the beginning of the *ɣarat*-season, but remain fresh and green all through the winter until about *tabsit*.

It is evident that Tuareg knowledge of botany is extremely comprehensive, and that they use this knowledge to make stock-breeding as rational as possible. They may perhaps not be so rational in protecting pastures, for they cut acacias' boughs to feed the kids resting in the camps, and it is most possible that they also overgraze certain pastures. However, the grazing grounds are very vast in comparison with the number of pastoralists, and I believe that overgrazing and arboreal devastation take place mainly around villages and towns where the flocks of sedentary people graze continuously in the same area. In Ahaggar the valuable fodder plants and plants which are important for collecting are often protected for two or three months in order that they may become fully developed (cf. p. 150, 179).

*233 The Tuareg take great care that their animals do not lack water. It is true that camels and also donkeys can do without water for many days even in summer, but at this season camels should preferably be watered every two or three days, and goats are always watered every two days when the weather is hot. In winter the animals are not watered so often, and this is true particularly if the animals feed on fresh annual plants. Camels can do without water even for weeks and months under such favourable

4/5 237 326

Fig. 97. The leather bucket known as *ajw* to the Northern Tuareg. The leather is tied to an iron ring made by blacksmiths. Collected in Ahaggar by Olufsen. Dimension of the iron ring: 0.275 m in diameter. (N.M. G. 1.51).

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Fig. 106. A small goat-herding camp of three related households. The inmates have not erected their skin tents, but have their luggage and their household utensils hanging upon posts (left). In the hot daytime the people live in the shade of the rock (right). Ahaggar (the *Atakor* zone), the *Dag Ɣali* tribe (the *Kel Tamanṛaset* section).

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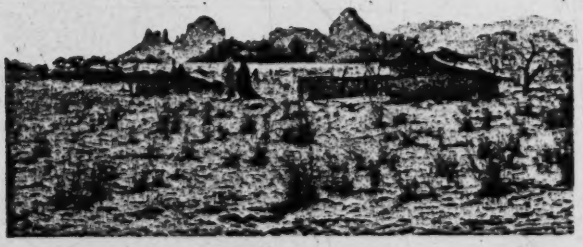

Fig. 107. A camp of four skin tents. Tasilé-n-Ajjer, the *Uraɣen* tribe.

361 *Atakor* zone. In this area kin groups of five or six generations, comprising about twenty tents, may
621 form a section camp for long periods. Thus I was told that all members of the *Kel Tamanṛaset* section
*233 camped together in the same place for eight months of the year 1952. Among the Tuareg, who have their grazing grounds mainly in the *Aboda* country, section camps are not so easily formed as annual pasture springs up less frequently. People of such tribes as the *Iklan-en-tawsit*, the *Tégehé-n-Efis*, and part of the *Aɣuh-en-tehlé* tribe, generally live in goat-camps, which are often smaller than those of the
824 *Dag Ɣali* tribe of the *Atakor* region. Where goats feed mainly on acacias it is not possible to keep such large flocks together as when grazing consists of fresh or dry annual plants. Acacia leaves are very important for fodder and their fruit-pods are still more valuable, but the trees grow scattered and consequently fodder is not so concentrated. We see again how stock-breeding among the Ahaggar Tuareg is an industry adapted to environment. The size of camps is determined by natural conditions.

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Wan Abu (Tasilé-n-Ajjer) from the pre-historic cattle-breeding period ("periode bovine"). The picture shows a hunter armed with a bow and hiding behind an ox (?) which is provided with a lead held in the left hand. The hunter approaches an ostrich and perhaps also giraffes and gazelles which are also depicted. This rock engraving was discovered by Lhote, who believes that the stalking animal depicted is an antelope (cf. Lhote 1958, Fig. 69 p. 147, p. 264).

(3) Hunting in disguise. True hunters do not use their ordinary dress of indigo or white colours during a hunt as it is seen by game animals at a great distance. The hunters use preferably a shirt and a head-cloth of yellow-brown colours which resemble the colours of sand and dry plants. I do not know whether other types of disguise are known. It is very likely (cf. Ayr Tuareg below p. 166).

(4) Hunting from artificial hiding-places. The use of artificial hiding-places consisting of walls built of stone is mentioned by Foucauld, who does not explain their use. They are known as *timuyal* (sing. *tamayilt*) (Foucauld 1951–52, III, p. 1179).

(5) Hunting with dogs. Greyhounds and greyhound-like dogs are used in hunting barbary sheep. The dogs surround the animal and prevent it to escaping, so that it can be killed by a hunter with a spear. There are very few greyhounds among the Ahaggar Tuareg, but slender greyhound-like dogs are fairly common (cf. p. 114 f.). The true greyhounds may succeed in running down gazelle, and I was told among the *Kel Ajjer* that greyhound are trained not to kill the game but to bite its legs, and then to return to their master to lead him to the ferociously-bitten animal so that he can kill it ritually. However, most Tuareg dogs are not able to run down adult gazelle. Occasionally they catch young animals of which they are allowed to eat such entrails as are not eaten by the Tuareg. Dogs can more easily catch hares. It is said that some dogs are trained to bring caught hares alive to their masters, but most dogs are not too well fed and therefore eat on the spot the hares they catch.

(6) Riding camels are sometimes used for the running down of game animals. Gazelle can be taken in this way only if they are wounded, and barbary sheep normally graze in mountains inaccessible to camels. But it happens that barbary sheep descend into sandy plains to feed on certain annual plants, and can then easily be taken by camel riders as they get very exhausted when they have to run quickly

Fig. 113. The spiked wheel-trap (*ifetaw*) connected with a noosed rope (*tayant*) attached to a stick. The wheel is made from straw of the *afeza* grass (*Panicum turgidum*) bent into circular form. Small pointed sticks (*ifulan*, sing. *afula*) are inserted into the straw circle and fixed to it by means of bast of the *absey* acacia (*Acacia Raddiana*) which is wrapped around the straw-wheel and the pointed sticks. The noosed rope is made from date palm bast, but frequently it is also made from *absey* bast. The small pointed sticks are made from twigs of the *azawa* tamarisk (*Tamarix gallica*). Ahaggar, the *Azjah-en-tehli* tribe. Dimension of the wheel: about 0.20 m (F.M. 141a–b).

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224 Tuareg are also aware of the use of poison. I have gathered no information about this myself, but
824 Lhote states that certain poisonous grain is used for the destruction of jackals and small rodents (Lhote 1951a, p. 43 f. & 132).

226 It is obvious that fishing cannot be an important industry to people of the Sahara, but fishing is practised in certain areas. One species of fish (*Clarias lazera*) is found in a few permanent pools of Central Ahaggar, but it is particularly common in the numerous permanent ponds of Tasilé-n-Ajjer, where there is also another, perch-like species. I have myself caught and eaten both species. Duveyrier states that there are three distinct species in Tasilé-n-Ajjer:— (1) *asoulmeh* (*asulmey*) (*Clarias Lazera*); (2) *isattafen* (*i-sejjefen*); (3) *imanan* (pl. *imenan*) (Duveyrier 1864, p. 227, 238). Fishing is described
262 by Duveyrier as follows: "Les poissons des lacs de Mihero donnent lieu à une pêche qui contribue
566 à l'alimentation des serfs riverains. A cet effet, ils creusent sur les bords des lacs de petits canaux étroits, aboutissant à des réservoirs dans lesquels les poissons viennent pour y chercher une nourriture qu'ils ne trouvent pas dans les profondeurs des lacs. Quand ils y sont entrés on renferme les conduits et on les prend" (Duveyrier 1864, p. 238 f.). Another fishing method is described by Lhote: "Ils construisent des espèces de fascines avec des tiges de mrokba ou des branches de tamarix, puis, entrant à plusieurs dans l'eau ils forment une espèce de barrage au moyen de ces fascines en les mettant bout à bout et les poussent ensuite doucement devant eux. Ils prennent bien soin de draîner le fond de sorte que le poisson soit systématiquement chassé. Lorsqu'ils arrivent près de la rive opposée à celle d'où ils sont partis, ils poussent rapidement par un dernier effort et éjectent le poison sur le sable ou ils le ramassent. Ils recommencent ce manège plusieurs fois jusqu'à ce qu'ils aient capturé la majorité des poissons" (Lhote 1951a, p. 53). In Tasilé-n-Ajjer I was told about a third fishing method, namely the use of a piece of cotton (e.g., an old cotton shirt) attached to two poles. The cotton piece serves as a net over which the fish are led. There seem to be no other fishing methods, as both the fish-hook and the harpoon are unknown.

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136 The Ayr Massif with adjacent plains is very rich in game in comparison with the true desert country inhabited by the Northern Tuareg. Barbary sheep (*éjital*; *Ammotragus lervia Angusi*) are common in the mountains and also south of the Massif around the cliff known as *Falaise de Tigeddi*. Gazelle (*achenkad*; *Gazella dorcas* sp.) (*énir*; *Gazella dama-permista*) and the addax antelope (*amellul*; *Addax nasomaculatus*), which are found in Northern Tuareg countries, are more abundant in Ayr where there are also bigger types of game, notably the oryx antelope (*ézem*; *Aegoryx algazel algazel*), and the giraffe (*amdef*; *Giraffa camelopardalis*) which is found south and southwest of the Massif (e.g., around Ingal and Aderbissinat). The ostrich (*énhal*; *Struthio camelus*) is still very common in isolated regions of Ayr including the northern outskirts of the mountains, where I have seen flocks of more than twenty birds. There are in Ayr as mentioned above (p. 31) many bird species which are unknown or rare further north in the desert, e.g., the guinea fowl (*taylalt*; *Numida clappertoni clapperioni*) and a bustard species (*agayis*; *Choriotis arabs stieberi*). Game birds are extremely abundant in certain parts of Ayr. The birds come in amazing numbers to waterholes and open wells to drink in the evening at

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

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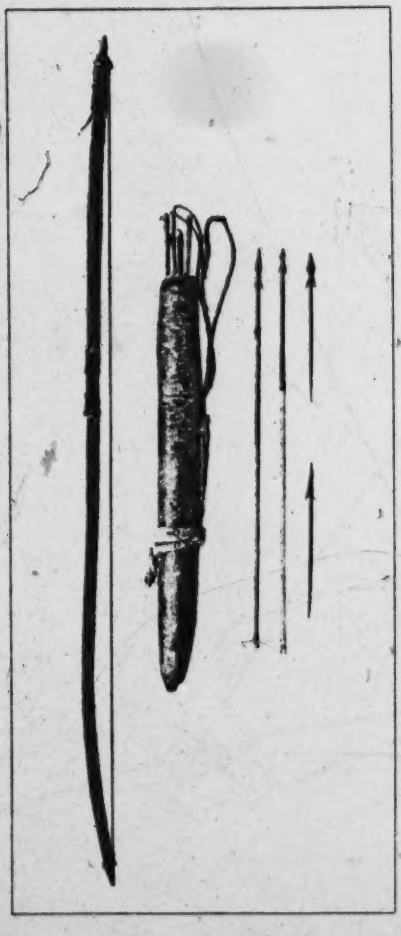

Fig. 119. Bow (*iagenzf*), arrows (*imeran*), and quiver (*ahamaren*) from the Hausa-speaking population living south of Ayr around Aderbissinat. The bow is made from wood of a tree called *ddinew* and has a string of ox-hide. The arrows have shafts of wood or reed; their iron points are made by blacksmiths. The quiver is made from ox-hide with a plaster of cow's excreta applied to the inner side. Dimension of the bow: 1.20 m. (N.M. G. 6621).

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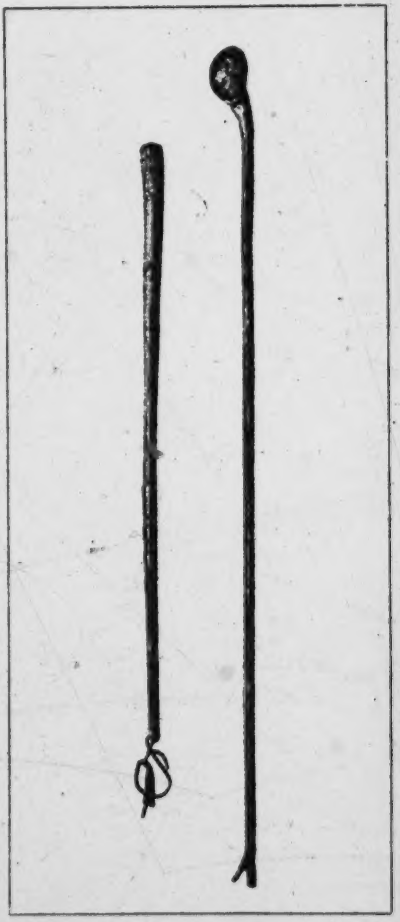

Fig. 120. Tuareg clubs.

a. Wooden club (*aburi*). Dimension: 0.995 m long. (N.M. G. 1.139). Ahaggar, Olufsen's Collection.

b. Wooden club. Used for weapon and for cattle-driving by Tuareg around Timbuktu. Made from a bough of *Combretum aculeatum*. Collected by O. Hagerup. Dimension: 1.39 m long. (N.M. G. 3086). All slaves I saw among the *Iwllemmeden* near Ayoru carried this weapon.

Collecting

In this chapter on collecting such edible plants are mentioned as play a part in Tuareg nourishment. Wild plants are also collected for other purposes. Many species are important to craft or have a medicinal value. Some of these latter species are mentioned elsewhere in this study.

EDIBLE PLANTS OF THE AHAGGAR AREA

Wild plants which yield edible fruits, seeds, stems, or roots in Ahaggar comprise more than fifty different species. But the importance of collecting should not be judged from this, as all these plants are never found within the same area, and most are eaten only occasionally as a kind of relish or when agricultural food (wheat, barley, millet, dates) is lacking. I have supplemented my own list of edible plants with important information from Maire's study of Ahaggar botany (Maire 1933 & 1940). In my list the letters Tr., L.M., and U.M. stand for Maire's botanical zones, namely the Tropical Zone, the Lower Mediterranean Zone, and the Upper Mediterranean Zone. The following edible plants are collected in Ahaggar and adjacent regions:—

tirfas (sing. *tarfest*) (*Terfezia ovalispora*). Tr., L.M. A fungus which, according to Maire, lives on the roots of *Helianthemum Lippii* & *H. ellipticum* known to the Tuareg of Ahaggar as *urrug* (Maire 1933, p. 22, 159 et suiv.). This white fungus, which is frequently termed *tirfas n urrug* by the Tuareg, is prepared for eating together with various other dishes. It is frequently added to the so-called kus-kus.

tahlé (*Typha elephantina*) Tr. Roots and certain lower parts of the stem are eaten raw or boiled. When vegetable food is scarce they are also pounded or ground into flour.

akeywod (*Typha australis*) Tr., L.M. Roots of this plant are ground into flour.

téséhgelt (*Saccharum Ravennae*). Tr., L.M. "Cette plante ... laisse très souvent exsuder un liquide sucré qui se concrète en masses plus ou moins cristallisées; les Tuareg utilisent ce sucre" (Maire 1933, p. 54).

afezu (*Panicum turgidum*). Tr. A perennial grass extremely common in the lower valleys of Ahaggar. Seeds are collected in receptacles (e.g., *ahaga*, Fig. 213) by beating the ears of the grass with a stick. The seeds are not suitable for bread, but are esteemed for porridge and *tébik*, that is seeds pounded in the mortar and eaten without further preparation. Ashes of this grass contain soda and are often mixed with tobacco for chewing.

[p. 175]

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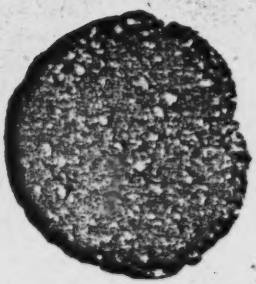

Fig. 126. A cheese-like mass of *adamam* berries (*Osyris alba*). The fresh berries are pounded in the large mortar (*tindé*) or are crushed between two stones to be formed into pieces of cheese form to be dried. This cheese-like mass of *adamam* berries is used by Tuareg women as a kind of face ointment against sun burn, pimples, and the like. They apply this ointment to the face as follows:— A little milk is poured upon a stone, the cheese-like mass of berries is rubbed against it, and the mixture of milk and berries is thereupon rubbed into the skin of the face with the fingers. Ahaggar, the *Dag Rali* tribe. Dimension: 0.075 m. (N.M. G. 5279a).

222
262 *enag* (*Leptadenia pyrotechnica*). Tr. A tree with edible fruit.

[272] *tañhart* (*Menisa longifolia*). Tr., L.M. An annual plant. Used as an aromatic for adding to tea.

awit, generally known by the collective name *awihat* (*Salvia Chudaei*). Tr., (L.M.). An annual plant used as an aromatic for tea.

[824] [482] *éfelehleh* (*Hyoscyamus muticus* ssp. *falezlez*). Tr. This plant is extremely venomous for human beings, though not for animals. In the past it was used by the Tuareg as a poison for enemies. Members of La Mission Flatters (1880–81) were poisoned by the Tuareg using poison of this plant inserted into dates presented to the expedition. "La plante, absorbée à petite dose, aurait la propriété de faire engraisser. Les femmes du Tidikelt l'emploient dans ce but, en en faisant cuire une petite quantité dans de l'eau avec de la farine et de la graisse; elles laissent réduire et absorbent la bouillie obtenue, puis se couvrent pour transpirer (Voinot)" (Maire 1933, p. 192).

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222
262 *ahahel* (*Cistanche Phelypaea*). Tr., L.M. A plant yielding edible roots. After drying the roots are pounded in a large millet mortar to be used for bread which is much esteemed by the Tuareg. "Cette
252 plante est recoltée jeune par les indigènes, puis placée dans le sable sous une couche de *drinn* (*Aristida pungens*) jusqu'à noircissement et dessication. Le produit sec est moulu et utilisé dans l'alimentation (Voinot)" (Maire 1933, p. 196).

éfelekchi (*Orobanche aegyptiaca & O. cernua*). Tr., L.M. A plant yielding edible roots.

tanzellit (*Orobanche sp.*). Tr. Very rare. A plant yielding edible roots.

teţellet (*Colocynthis vulgaris*). Tr. Seeds are eaten after boiling and drying.

alked (*Cucumis pustulatus*). Tr. Rare. Seeds are eaten after boiling and drying.

[263] *takkilt* (*Cotula cinerea*). Tr. "Les Touareg utilisent cette plante comme condiment, principalement pour la viande qui commence à se gâter" (Maire 1933, p. 209).

[439] *idhereggelé* (*Artemisia judaica* ssp. *sahariensis*). Tr., (L.M.). "Cette plante, comme le *Myrtus Nivellei*, est récoltée en grande quantité, séchée et exportée au Soudan, où elle est employée comme aromate et condiment" (Maire 1933, p. 212).

[272] *zézzeré* (*Artemisia herba alba*). (Tr.), L.M. Used as an aromatic for adding to tea.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

ejako. According to Foucauld a small annual edible plant growing in the Ahaggar Mountains at an altitude above 2000 metres (Foucauld 1951–52, II, p. 712). Maire mentions this plant as unindentified (Maire 1933, p. 263).

Collecting is mainly the task of women, but males – particularly uninitiated boys and slaves – also participate. Seed-plants are generally harvested by rubbing the ears of the plants between the fingers, but the *tulhult* grass (*Aristida pungens*) is cut with a sickle (*amreh*; Fig. 143 a–b) to be thrashed and winnowed like wheat and barley. Edible roots are frequently collected merely by hand. However, a digging stick (*ilawef*; Fig. 123) provided with an iron point is also used to dig up certain wild plants such as *ahihel* (*Cistanche Phelypaea*) and similar root plants. This digging stick is characteristic of vassal women who use it for many different purposes, e.g., to make holes for tent poles.

The very best among the above mentioned seed-plants is the *tulhult* grass (*Aristida pungens*). Its seeds are collected or harvested by certain Tuareg inhabiting the lower parts of Ahaggar, but are important particularly to the Tuareg living in and around Tasilé-n-Ajjer. Within the Ahaggar Massif the most important seeds are those of *afezu* (*Panicum turgidum*) and *tawit* (*Chenopodium Vulvaria*). The right to collect these seeds is free to everybody, and Tuareg of the *Abada* zone may send their slaves to the *Atakor* zone to collect *tawit*-seeds in the mountain plateau of Asekrem. The species of *afezu* and *tawit* are sometimes protected by an ban on grazing for three and two months respectively in order that their seeds may grow ripe for collecting. The right to put a ban on grazing of the two species belongs to the Tuareg in whom territorial rights of a sub-area are vested (cf. p. 150). It is said that under very favourable conditions a single household may collect some hundred kilos of seeds of the two plants mentioned. This may seem rather impressive, but even in good years when milk is abundant collecting will not provide pastoral Tuareg of Ahaggar with sufficient vegetable food, for seeds of wild plants are far less nourishing than are grains of wheat, barley, and millet. The collecting of wild plants important for food is as dependent on climatic conditions as is stock-breeding. In dry years, when domestic animals yield little or no milk at all, there will also be no wild seeds for collecting.

Fig. 127. Very small bag known as *ilem* ("skin") made from a kid's scrotum (*tipassaf*). The bag contains a piece of resin of the *tamat* acacia (*Acacia seyal*). This resin is eaten by the Tuareg as a remedy against stomachache. Ahaggar, the *Ajjer-en-tehit* tribe. Dimension of the piece of resin: 0.07 m long. (F.M. 149a–b).

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222 [134] [433] Even in good years it may happen that edible seed-plants are eaten by locusts before they become ripe for collecting. Collecting is of secondary importance to the Tuareg of Ahaggar though to most pastoralists it is more important than hunting.

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134 137 We have seen that Ayr has better grazing grounds and more game than Ahaggar, and it is only natural that this southern area is also a more favourable one for the collecting of wild plants. Nevertheless, it seems as if collecting is not so important to the Ayr Tuareg who have more livestock for 222 [433] which millet and wheat can be obtained without much difficulty. The number of edible plants utilized in Ayr is probably a very large one. Thus it is said that certain *Kel Ewey* Tuareg collect many different plants, but my inquiries into the methods and the value of collecting were limited to Tuareg of the *Kel Ferwan* drum-group of Southern Ayr where the following species are collected for food:—

222 262 *afagag* (*Acacia Raddiana*). Pods of this acacia are dried and, after pounding in a large millet mortar, mixed with milk to be eaten or drunk like the Tuareg dish known as *arejira* (cf. p. 245 f.).

252 *ebezgin* (*Salvadora persica*). Fruit is eaten without any preparation.

tadrut (*Boscia senegalensis*). Berries are pounded in the millet mortar to obtain the limpid juice which is added to porridge.

[124] *tanayt* (*Hyphaene thebaica*). The dum palm, which is of extreme importance for the handicraft of the Ayr Tuareg, is also valuable as food. The young nuts are opened with a knife and the kernels are eaten. The old nuts have an edible outer coating which is eaten by children and even by adults when they are hungry. These old nuts are also pounded in the millet mortar together with seeds of *agerruf*, cf. below.

afezu (*Panicum turgidum*). This perennial grass is very abundant all over Ayr. Collecting of its seeds is done by rubbing the ears of the grass between the hands to allow the seeds to fall into a plaited bowl. Seeds are pounded in a millet mortar to be used for porridge.

ichiben, that is seeds of an annual grass — apparently identical with *Panicum turgidum* and/or *P. sanguinale*. The seeds are collected in two different ways: — (1) If the ripe seeds have fallen to the ground they are swept together with a bunch of straw. (2) The ears are cut with a knife to be threshed by pounding in a millet mortar. The seeds are highly esteemed, being collected to a greater extent than seeds of other wild plants. The seeds are used particularly for porridge, but also for certain other dishes such as *arejira* (cf. p. 245 f.).

ichit (*Eragrostis* sup.). A grass yielding red seeds collected in the following way: The ears are beaten with the hands so that the seeds fall into a plaited bowl. The seeds are used only for porridge.

wajag (*Cenchrus cathartieus* & *C. Priouri*). Annual seed-plants with thorny seeds. The dry plants are beaten with a stick and the fallen seeds are collected in a heap to be threshed with a stick. The seeds are pounded in a millet mortar for porridge.

agerruf (*Tribulus terrester*). An annual plant with thorny seeds which are collected as just described for the *wajag* plants. The seeds are pounded in a millet mortar to be eaten without further preparation

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Fig. 136. Irrigation of a young wheat-plot. The canal ridges are opened with a hoe in order to let water penetrate into the garden beds. Ahaggar, Abalessa.

to be used for dyeing skins red (cf. p. 282). Maize (*Zea mays*) is also grown as a summer crop in some of the cultivation centres; it is called *engafuld*, or *engafuld masri* (masri = Egyptian) because it is said to have been introduced from Egypt.

Tomatoes (*tomatem*; *Solanum lycopersicum*) are grown mainly in summer and constitute a very important crop. The ripe fruit is sliced and left to dry on a layer of straw in the garden. They are crushed and pounded and are added to various dishes, e.g., the so-called kuskus (*keskesu*, cf. p. 247). Various types of melons and gourds are also grown in summer, e.g., the water melon (*talegezt*; *Colocynthis Citrullus*), a type of ordinary melon known as *idtakeli* or *tazenut* (*Cucurbita* sp.) which is frequently sliced and dried in the same way as tomatoes, and a kind of large gourd (*kabuya*; *Cucurbita maxima*). Certain other vegetables are grown in most gardens, notably various kinds of onions (*iskert*, *Allium sativum*; *efeleli*, *Allium cepa*) and a kind of beans known as *tadellak*. A few plants are grown as spices, e.g., saffron (*tanermit*, *Crocus sativus*), red pebber (*chitta*, *Capsicum annum*), or for tea-admixture, e.g., the mint (*imerner*, *Mentha piperita* var.) and a plant known as *lahabok* which is said to have been introduced from the Sudan. Two very poisonous plants are also grown in certain gardens of Ahaggar, namely *efelehleh* (*Hyoscyamus muticus* ssp. *falezlez*), which also grows wild in the lower country (cf. p. 178), and *burzig* (*Datura Stramonium*) (cf. Maire 1933, I, p. 191 f.). Foucauld mentions two other plants grown for their medicinal value (*ibeqliwen*, *Trigonella foenumgraecum*; *tikammin*) (Foucauld 1951–52, I, p. 33 & II, p. 812). A kind of wild salad (*tamaghé*) is also grown in the gardens according to Foucauld (Foucauld 1951–52, III, p. 1170). Potatoes (*Solanum tuberosum*) are now grown in some of the mountain oases – mainly for selling to Europeans at Tamanrasset. Among other cultivated plants found in the gardens of Ahaggar mention can be made of the following species after Maire:—

Lepidium sativum, *Brassica Rapa* & *B. oleracea* (*aharet*), *Linum usitatissimum* (*ilateld*, or *anarka*), *Medicago sativa*, *Pisum arvense* (*demchi*), *Vicia Faba*, *Lens culinaris* (*elredes*), *Vigna catjang*, *Cori-*

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there will be one entirely dry year throughout, during which stock-breeding products have little or no value as food, and in such years of dry pasture there will also be very few wild plants to collect. Hunting, which plays little part for most Tuareg nowadays, is also of little value in an entirely dry year when many game animals die or migrate to other regions with more favourable pasture. It would seem obvious for pastoral Tuareg to do the same and to take their animals to grazing grounds outside of Ahaggar – particularly to the southern plains where pasture is normally better than in their own country. We have seen that most Ahaggar Tuareg in bad years have their she-camels far from Ahaggar in the Tamesna plains or in the country north of Aḏraṛ-n-Foṛas. We have also mentioned that, under very severe conditions, camps of Ahaggar and Ahnet may move to these southern regions with their flocks, though extensive goat-migrations are not always profitable. But most Tuareg remain in Ahaggar even in very dry years with their camps and flocks. Some of the animals will die, and none of them can be mated so that the flocks may rapidly decrease. During such years of drought the Ahaggar Tuareg live so to speak exclusively on agricultural food products of which they get only a part from their gardens grown by sedentary agriculturists (the *Ḥarratin*, or *Izzegaren*). It is mainly through caravan trading that the Ahaggar Tuareg acquire their vegetable food products. Their two important trading expeditions to the Tidikelt oases and to the Sudan are carried out anually for the main purpose of acquiring dates and millet.

Trading with the Tidikelt oases (Awlef and In Salah) is based mainly upon a surplus of goats, camels, butter and cheese, and on dried meat. But many Tuareg who obtain large amounts of millet from the Sudanese trading expedition also sell part of their wheat grown in their own gardens in Ahaggar, and Sudanese articles bought during their south-bound trading expedition. In a dry year some Tuareg may choose not to visit the Tidikelt area as they have too small a surplus for trading. The south-bound caravans, on the other hand, are rarely prevented from going as their main trading object is rock-salt of an excellent quality mined at Amaḏror north-east of the Ahaggar Massif. Both north-bound and south-bound caravans will set off in autumn when the hottest season has come to an end, that is at the end of September or at the beginning of October.

The caravan route from Tamanṛaset in Ahaggar to In Salah in Tidikelt is about 750 kilometres, and the route is rather difficult because pasture is normally lacking for three to four days of the journey. Most Tuareg who cross this part of the desert therefore bring with them large supplies of the dried *tulluli*-grass (*Aristida pungens*), which also serves as fodder for the pack-camels during the stay in the oases around which there is little pasture. The journey takes about twenty days in each direction, and the north-bound caravans return to Ahaggar again already in December or in January. The traders return with their camels loaded with dates of which a part may be re-sold in Ahaggar (Tamanṛaset), but they also buy European cotton and other European articles, which are cheaper in the north, and woollen blankets woven by sedentary people of the northern oases.

The south-bound caravans are very extensive. The towns visited in the south are Agadez, Tawa Tanut, and Zinder. The distance from Tamanṛaset to Zinder is, as the crow flies, about 1200 kilometres, while the distance from Tamanṛaset to Amaḏror, where salt is mined, is about 300 kilometres. In total the caravan journey from Ahaggar to Zinder and back again for many Tuareg amounts to more than 3000 kilometres. The south-bound caravans are organized as follows:— Slaves take the

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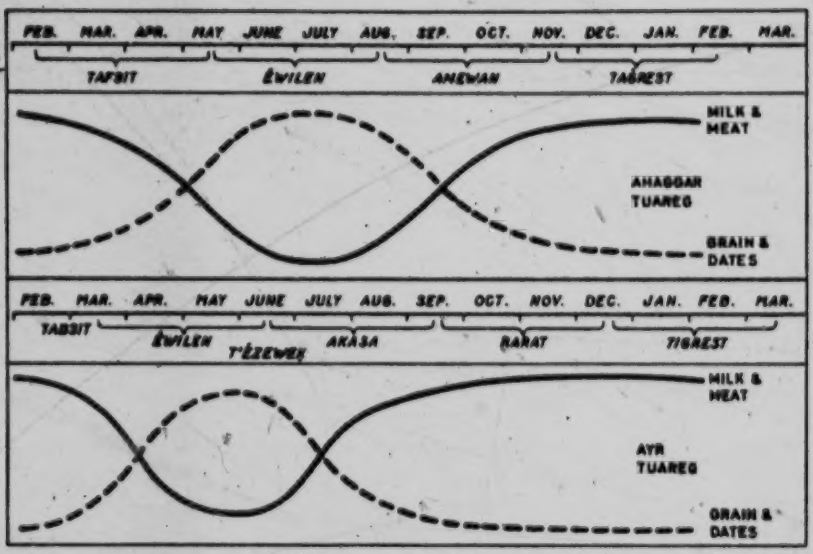

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Fig. 151. The relative importance throughout the year of food derived from stock-breeding and vegetable products mainly comprising agricultural products. The curves describe conditions in good years for wealthy families. However, milk (and meat) is less important to most Ayr families than indicated in the diagram which covers a household making use of the particular type of annual pasture which remains green throughout winter, notably *alwat* (*Schouwia purpurea ssp. Schimperi*) *adrykal* (*Astragalus Vogelii*), and *tegelist* (*Colocynthis vulgaris*). – This diagram should be compared with Fig. 14 where climatic and botanical changes throughout the year are outlined.

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439 it is remunerative to buy an extra supply of millet in Damergu and to exchange it for dates and salt at Bilma. Caravan trading is a source of profit to the Ayr Tuareg, but most of them ultimately acquire their agricultural food products in exchange for stock and stock-breeding products. Very few of them mine salt at Amadror, and most of them obtain salt in return for millet bought for domestic animals in Damergu, or for meat of domestic animals butchered in Ayr. The Tuareg cannot easily subsist without agricultural products but they can obtain them in exchange for their livestock.

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[184] We see again that conditions of stock-breeding are very favourable in Ayr in comparison with those of Ahaggar and in Tasilé-n-Ajjer, where frequent drought periods make it difficult for the Tuareg to exist. It is easily understandable that the favourable grazing conditions of Ayr have caused many Tuareg of the north to migrate southwards. These migrations take place even to-day and have gone

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262 on for centuries (cf. p. 411 ff.). However, even in Ayr it is most difficult to subsist without cultivated cereals (millet), and we must do away with the myth that pastoralists of North Africa live entirely on milk and meat from their animals – they do not. This is true for all Tuareg I have visited, including

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Fig. 153a–b. Tuareg funnels (*ásagéfi*, pl. *isagéfa*) which are used for milk, butter, and for other liquids.
a. Wooden funnel ornamented by burning. Made by blacksmiths. Ahaggar, the *Dag Ġali* tribe. Dimension: 0.210 m high. (F.M. 240).
b. Funnel plaited from straw of *taleggit* (*Juncus maritimus*) with the rim reinforced with leather. Made by Tuareg woman. Ahaggar, the *Dag Ġali* tribe. Dimension: 0.135 m high. (F.M. 243).

In Ahaggar the method of churning butter is as follows:— Milk of the morning yield is put into a skin bag (*ámesesley*) (Figs. 156–157) to remain in this bag until next morning when churning takes place. During the hot season the *ámesesley*, filled with milk, is placed in the shade of the tent in daytime, while in winter it is placed in sunshine, or close to the fire. Some milk of the evening yield is sometimes added to the morning milk in the *ámesesley*. Before churning the milk thus soured is poured into the proper churning bag (*aġiwir*, *tanwart*) which is inflated and shaken. Churning bags may vary in size; when there is little milk to be churned a little bag is used and shaking is done holding it in the hands (Fig. 158). When milk is very plentiful, butter is sometimes churned in larger bags (*anwar*), which at one end is attached to a pole, while shaking is done by pulling the other end of the bag with one or both hands. When the milk is shaken in this way it forms small white balls of butter which are removed from the churning bag with a wooden spoon (Fig. 191) when water has been added. This white butter (*udi wa mellen*, or *tesendut*) is occasionally used for food without further preparation, but this is not normal, for newly-churned butter is generally put into an earthen pot (*ídjrit*, or *ufrus*) (Figs. 186, 187a–b) together with parts of an annual plant known as *aynemis* (*Chinaydophora pubescens*) (Fig. 160) to be heated over the fire. Some Tuareg also add meal of dried dates, or of horns of barbary sheep. After heating, butter (*udi*) assumes a dark yellow colour. It is stored in containers made of camel's hide (*tahattint*, *anagen*, *ayahha*) (Figs. 161–162), or in Sudanese calabashes (*azzau*) (Figs. 163a–b). A particular metal pail (*ídjir*) (Fig. 164) manufactured by native blacksmiths is also used for butter in Ahaggar,

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butter in Ahaggar, and butter reserved for greasing the hair is frequently kept in a large horn (*tsek*) of barbary sheep (Fig. 165).

The Ayr Tuareg make butter (*wiji*) in much the same way as the Northern Tuareg. For churning they use a skin bag (*anwar*), or a calabash (*azewu*), and they say that they prefer skin bags in winter, and calabeshes in the hot season. Butter is heated or boiled immediately after churning, but the Ayr Tuareg do not add parts of plants, date flour, or the like. In Ayr butter is not churned as regularly as in the north. It is used mainly for cooking meat of thin animals, for a sauce which may be used for millet porridge instead of milk (cf. p. 243 f.), and for greasing the hair. Among the Northern Tuareg butter is added to many different dishes and particularly to bread, which is eaten almost daily by many people. In years of drought the Ahaggar Tuareg get their butter from Ayr (cf. p. 212, 215), and the Ayr Tuareg make much butter for export in such circumstances. They churn most butter from cow's

Fig. 154a–c.

a. Wooden funnel. Made by blacksmiths. Ahaggar, the *Dag Ball* tribe. Dimension: 0.146 m high. (N.M. G. 5203).
b. Funnel consisting of a piece of calabash which derives from the south. Ahaggar, the *Dag Ball* tribe. Dimension: 0.131 m high. (N.M. G. 5202).
c. Wooden funnel with a strap of cord of goat's hair. Made by blacksmiths. Ahaggar, Olufsen's collection. Dimension: 0.175 m high. (N.M. G. 1.150).

All wooden funnels are cut from wood of the *tahevekkar* tamarisk (*Tamarix aphylla*).

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Tuareg but also by the southern groups and by Arab pastoralists of the Sahara; it is also known in the Atlas, and is on the whole widely distributed in Northern Africa. This type of cheese is known to the Northern Tuareg as *takammart* and it is manufactured as follows:— Fresh milk is heated and then poured into a large wooden bowl (*e.g.; tarelut*) (Figs. 195a–b). The milk is curdled into a mass of cheese by means of a rennet (*akammar*) consisting of the abomasum of kids that have never tasted anything but milk. The curdled mass of cheese is pressed with the hands and with a piece of straw-mat (*éseber*) in order that the liquids may separate. The mass of cheese is formed into small rectangular pieces of cheese which are left on the little straw-mat for about one day. They are then removed to be dried finally on a platform (*takaga, tafalkat*) made of branches.

Cheese made from fresh milk is known to the Ayr Tuareg as *tekemmart*; it is manufactured to very great extent and much in the same fashion as just described from Ahaggar. The abomasum of little kids or lambs to be used for rennet is named *tedeyast*, and the Ayr Tuareg add parts of an annual plant known as *ekochmaren* (*Caralluma Mouretii*) in order that the milk may curdle quickly. The Ayr Tuareg also use little mats plaited from stems of the *afezu* grass (*Panicum turgidum*) to press and form the rectangular pieces of cheese; the Ayr Tuareg make mati (*tésebert*) (Fig. 168) particularly for this purpose, while the Ahaggar Tuareg generally use an old piece of a tent mat (*éseber*). In Ayr the rectangular pieces of cheese are dried on bunches of hay placed in trees (acacias), or on the top of the mat-covered tents.

The *takammart* or *tekemmart* type of cheese made from fresh milk is in high esteem as food among all pastoralists of the Sahara. It is generally eaten when newly-made and soft, though it may also be stored. The Ahaggar Tuareg make this type of cheese only when milk is plentiful, while the Ayr Tuareg manufacture it most of the year though the main season of cheese-making is the season of *akasa*.

Fig. 136. Skin bag of the *dumunky* type used to sour milk before churning. Ahaggar, the *Ajjah-en-ahid* tribe. Dimension: 0.37 m high. (F.M. 170).

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Fig. 159. Calabash (*azem*) of the type used by Ayr Tuareg for milk and for churning butter. It is provided with a wooden stopper and a handle plaited from goat-skin. Ayr, the *Imezzeweg* tribe. Dimension: 0.30 m. (N.M, G. 6664).

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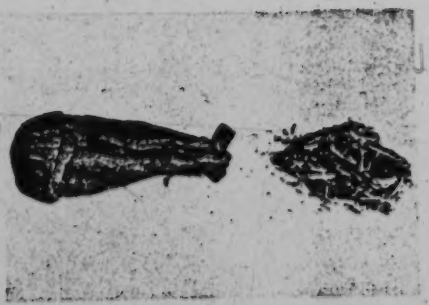

Fig. 160. Skin bag (*ebelhej*) containing parts of the annual plant *ayuzzuz* (*Chlamydophora pubescens*) which are added to butter before heating in an earthen pot. Ahaggar, the *Ajjah-en-tehht* tribe. Dimension: the skin bag is about 0.15 m long. (F.M. 153).

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up with small strips of fat. The pieces of liver covered with fat are put on a slender iron or wooden rod to be roasted slightly over the fire. This dish is known to all Tuareg by the Arabic word *shuqfuf*. It was introduced among the Northern Tuareg by the Arabs, but is not widely known among the Ayr Tuareg.

This brief description of Tuareg meat preparation can adequately be supplemented by a reference to two peculiar dishes:— (1) A dish known to the Ahaggar Tuareg as *talebeggat*. It consists of meat which after boiling or roasting is pounded in a large mortar and frequently served with liquid butter. This dish is also known to the Ayr Tuareg. (2) A dish which is described from Ahaggar by Foucauld under the name *ebaqtor*. It consists of untanned skin which is eaten in case of hunger after the following preparation:— Untanned skin from household implements, shields, and the like is roasted under the ashes, and is thereupon pounded into small pieces. These are eaten without any further preparation, or after boiling. (Foucauld 1951–52, I, p. 73).

Like other North African peoples the Tuareg dry meat of domestic animals and of game. The people of Ayr know three distinct drying methods, namely (1) *twesan*, that is meat which is boiled until it is free of blood; it is dried in the shade; (2) *tikelsin*, uncooked meat cut into pieces to be dried on a string in the shade; (3) *kules*, uncooked meat cut into strips which are dried for some time to be treated with salt and various spices. This last method is not practised among the Tuareg of Ayr, but by sedentary people of Agadez and by Negroes further south in Damergu. The Ahaggar Tuareg generally boil or roast the meat before drying; meat roasted in the ashes according to the *abgul* method and thereupon dried is known as *takasa*. I do not know whether the Ahaggar Tuareg also practise the method of drying raw meat like the Ayr Tuareg, but the dried *agezzeraw* lizzards which they take to Tidikelt on trading expeditions, are dried uncooked. Furthermore, the method of drying raw meat is known elsewhere in the Northern Sahara, and I have myself seen it practised among the Berber-speaking *Chawiya* of Aurès.

I conclude the description of Tuareg meat preparation with a brief note on the use of blood of living

Fig. 166. Wooden double-vessel (*asaw*) to contain water and butter for greasing the hair. Similar containers with a third vessel for fine-grained sand are also found among the Tuareg. Made by blacksmith from wood of the *tabarak* tree (*Balanites aegyptiaca*). Geometrical ornaments are produced by burning with a hot iron. Ahaggar, *Ahl Azzi* Arabs at Tamanrasset. Dimension: 0.241 m long. (N.M. G. 5880).

[text continues on p. 235]

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Fig. 171. Ordinary meat-knife (*elmost*) of the type used among Northern Tuareg and Arabs. Its broken handle is mended with hide of barbary sheep sewn with leather thread. Ahaggar, the *Dag Rali* tribe. Dimension: 0.28 m (total length). (F.M. 249).
All knives are manufactured by blacksmiths.

wheat bread is eaten particularly during migrations and on trading expeditions, or in periods when butter is rare (Lhote 1955a, p. 262). This statement disagrees with my own experience. Wheat bread is an ordinary diet of many Northern Tuareg. Bread is also baked from barley and from certain wild seeds (notably *tawit*, *Chenopodium Vulvaria*; *ihéyefyef*, *Aizoon canariense*; *tullult*, *Aristida pungens*) and wild roots (*ahakel*, *Cistanche Phelypaea*), while millet and sorghum are considered less suitable for baking. Seeds are generally prepared for baking by grinding them into flour by saddle querns or handmills. In Northern Tuareg country there are two types of bread which have been introduced as a result of contact with Arabs or the Arabic-speaking *Harratin*. One type is named *elfetat* and is baked

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Fig. 172a–b. Meat knives.
a. Knife (*tzegiz*) of Tebu type to be carried in its sheath around the upper arm. These knives are sometimes used in Ayr. Agadez. Dimension: 0.370 m. (total length). (N.M. G. 6620a–b).
b. Knife (*tzegiz*) of the double-edged type normally used in Ayr. The *Imezzureg* tribe. Dimension: 0.377 m (total length). N.M. G. 6665a–b).

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Fig. 177. The large millet mortar (*tindi*) with its heavy wooden pestle (*ẖeyen*). It is used almost daily for pounding millet in the camps and it is used also to pound other cereals, dates, and even meat. Mortars of this type are manufactured in Southern Tuareg country by blacksmiths. The specimen depicted is made of wood from a tree growing in the Sudan and known to the Northern Tuareg as *tuyia*. Introduced to Ahaggar from Zinder, the *Dag Rali* tribe. Dimension of the mortar: 0.445 m high, 0.299 m in diameter at the rim. Dimension of the pestle: 1.255 m long. N.M. G. 5224a–b.

Fig. 178. Little mortar (*tindi*) with a short wooden pestle (*ẖeyen*). Manufactured from wood of *obsey* (*Acacia Raddiana*) by a blacksmith of Tamanrasset. Ahaggar, *Ifuvatin of* Tarhawhawt. Dimension of the mortar: 0.230–0.235 m high, 0.170–0.180 m in diameter at the rim. Dimension of the pestle: 0.350 m long. (N.M. G. 5838a–b).

It is called *ẖanef* and is baked in the following manner:— The millet flour is mixed with juice of *tadent*-berries (i.e., berries of *Boscia senegalensis*) and also with certain medicines unknown to my informants who said they were of Sudanese origin. This mixture is made into a solid dough with a very small content of water, and is baked in the sand where it is covered with hot sand, ashes, and embers in the same way as the bread type known as *tagella* (*tafella* in the north).

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bowl and the plaited tray just described, and the flour is shaken into the large wooden bowl (*elkoda*; Fig. 195b) while the unpounded seeds remain in the plaited receptacles. (3) The small amount of seeds which have not yet been turned into flour is put back into the mortar, a little water is again added, and pounding is resumed for five to ten minutes. Most seeds are now turned into flour which is placed in the wooden bowl by shaking the plaited receptacles. (4) The seeds which are not yet pounded after this treatment are replaced in the mortar to be pounded for two or three minutes without the addition of water. The flour produced is shaken into the wooden bowl. (5) What remains unpounded is replaced in the mortar to be pounded without water for two or three minutes, and the flour obtained is shaken into the wooden bowl. (6) The flour is put into the large cooking pot (*érir*) which has been boiling with water during pounding. (7) An extremely small quantity of flour derived from a final pounding is added to the pot after cooking for about five minutes. (8) During cooking the porridge is stirred with a wooden stick known to the Ahaggar Tuareg as *aserwi* (Fig. 188).

Millet porridge (*esink*, or *echink*) is of heavy consistency and is normally eaten with milk by means of spoons. But if milk is lacking or is scarce, the Tuareg also add various types of sauces such as the following which is made by many Ayr Tuareg:—Leaves of certain plants (*abezey*, *Cassia tora*; *malokhiya*, *Corchorus tridens*; *kuka*, a large tree growing in the Sudan) or seeds of a plant known as *ékabewa* (*Corchorus olitorius*) are put into a large mortar to be pounded together with onions, dried tomatoes,

Fig. 180. Tuareg woman grinding wheat on the simple saddle quern (*tahaut*). The saddle quern is placed upon a piece of skin (leather) called *asenisi* which receives the flour. Ahaggar, the *Dag Rali* tribe.

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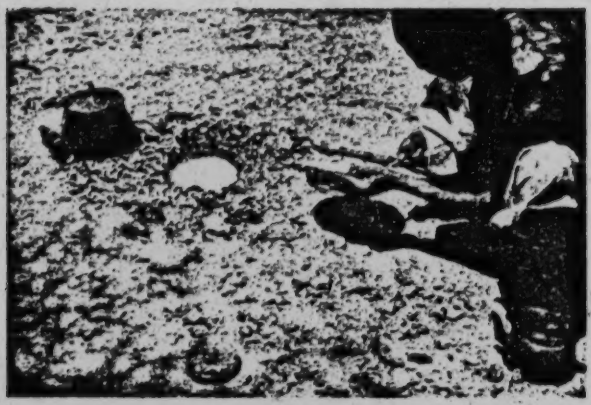

Fig. 183. Baking a *tafelle* bread. The gruel-dough before it is covered with sand, ashes, and embers. Ahaggar, *Ahl Azzi* Arabs.

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Fig. 184. Plaited tray (*tésyt*) which serves to winnow grain and flour but is used also for a cover of milk-bowls and eating bowls. Made according to the technique of coiled basketry by Tuareg woman. The plaiting material is straw of *tahaggit* (*Panicum turgidum*). Ahaggar, the *Ajjer-ou-tebbi* tribe. Dimension: 0.333–0.343 m in diameter. (N.M. G. 5826).

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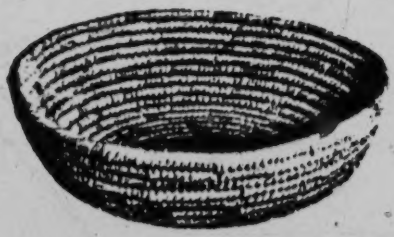

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Fig. 185. Tray or bowl *tabeyka* – perhaps not correctly spelled). It is used for winnowing, and it serves as an eating bowl and a drinking bowl as this container is watertight. Coiled basketry of date palm leaves (*afum*). Made by Tuareg woman. Ahaggar, the *Dag Rali* tribe. Dimension: 0.285 m in diameter. (F.M. 263).

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Fig. 186. Pot (*tahekkiat*) with a single handle. Manufactured by *Harratin* women in Ahaggar, the *Agukesu-tahil* tribe. Dimension: 0.18 m high. (F.M. 172).

in a mortar with a little water to a soft dough to which a little cheese, butter, or milk is added before eating. If a large quantity of milk is added this dish is known as *tarkit*. The Ahaggar Tuareg, as mentioned (p. 167), also pound dried dates with locusts to make a dish eaten by women who wish to grow fat. 262 252 261

The Arabs and the Arabic-speaking agriculturists of Tidikelt (the *Harratin*) have introduced among the Northern Tuareg the well-known North African dish generally called kuskus. The dish is known to the Tuareg as *keskesu* which is also Arabic by origin. But this dish is not the staple diet among the Northern Tuareg that it is among the Arabs and the Berbers of the Atlas. It is eaten mainly on festive occasions, and there are many Tuareg women who even to-day do not know how to prepare it. The *keskesu* dish is preferably made from wheat flour, though barley flour may also be used. The cereals are ground with hand-mills or quern stones (saddle querns), and the flour is rolled into very 262 [172] [171] 252

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Fig. 187a–b. Earthen cooking pots manufactured by *Ḥarratin* women in Ahaggar.
a. Pot (*tāyirt*). Ahaggar, *Ahl Azzi* Arabs of Tamanṛasst. Dimension: 0.210 m high. (N.M. G. 5841).
b. Pot (*alekkin*). Ahaggar, *Ḥarratin* of Taṛhawhawt. Dimension: 0.174 m high. (N.M. G. 5304).

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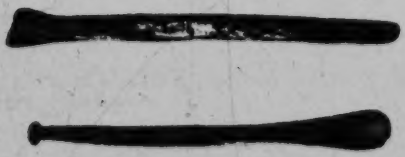

Fig. 188a–b. Simple ladles of the *asewi* type used for stirring millet porridge. Made by Tuareg women from wood of *ahaw* (*Acacia Raddiana*).
a. Ahaggar, the *Aghal-en-ahāl* tribe. Dimension: 0.382 m long. (N.M. G. 5211).
b. Ahaggar, the *Ikeyawen Hada* tribe. Dimension: 0.415 m long. (N.M. G. 5846).

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small balls with a diameter of up to five millimetres. The balls are put into a special earthen, wooden, or plaited bowl (*ḥwba*, or *dənfu*; Fig. 189) which has a number of small holes in the bottom. This receptacle is placed on the top of a cooking pot containing meat and/or vegetables to be boiled in water for a soup. The small flour balls are thus steamed by the boiling soup in the cooking pot. Like

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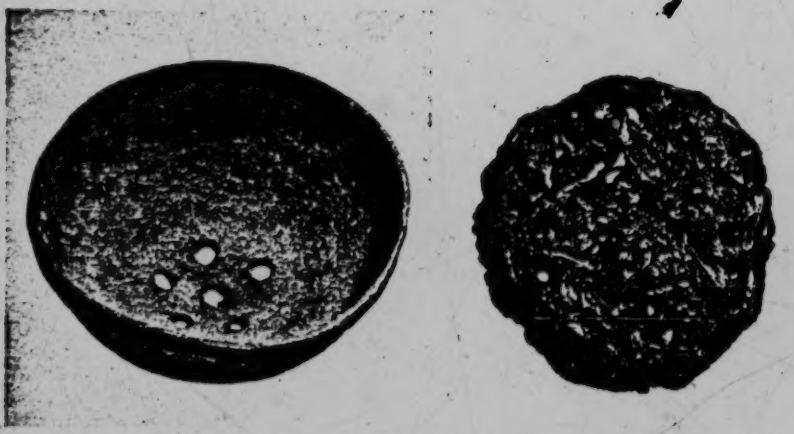

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Fig. 189. Earthen jar (*dewfa*, or *denbo*) of the particular type used for the preparation of *keskesu*. Ahaggar, *Harrâtin* of Tamanrasset. Dimension: 0.16 m high, 0.30 m in diameter. (F.M. 215).

Fig. 190. A kind of cake (*tarfat*) made of onions and dates which are mixed and pressed. Such cakes are made in Tidikelt but are sold at Tamanrasset by Arab merchants. They are pounded in the mortar or are crushed between two stones before cooking. Dimension: 0.10 m. (N.M. G. 5847a).

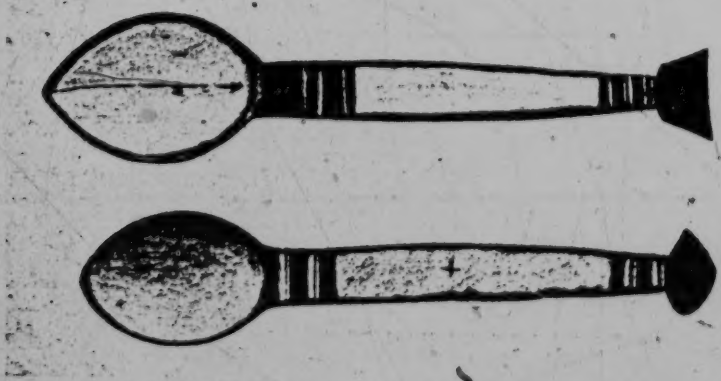

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Fig. 191. Wooden spoons (*tenukalt*, pl. *tinukalin*) cut by blacksmiths from wood of the *taburak* tree (*Balanites aegyptiaca*). Ahaggar, the *Ajjah-en-tehlt* and the *Dag Rali* tribes. Dimension: ca. 0.26–0.28 m. (F.M.).

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Fig. 194a–c. Bowl-like ladles from Ahaggar and Ayr. They are used mainly for eating liquid dishes – in particular for the dish known as *ayehara* (Ahaggar) or *ayejira* (Ayr).

a. Ladle (*tamulat*) cut by blacksmith from wood of the *tabaraḳ* tree (*Balanites aegyptiaca*). Ahaggar, blacksmiths of Abalessa. Dimension: 0.285 m long, 0.110–0.120 m in diameter (the bowl). (N.M. G. 5845).

b. Ladle (*tamulat*). Ayr, Agadez. Dimension: 0.330 m long. (N.M. G. 6631).

c. Ladle-like bowl (*assay*) cut by blacksmith from wood of the *tabaraḳ* tree (*Balanites aegyptiaca*). Ahaggar, *Ahl Azzi* Arabs of Tamanrasset. This ladle-like bowl was not used for food but for conservation of fine-grained sand used for hair-dressing together with water and butter. Dimension: 0.330 m long, 0.120 m in diameter (the bowl). (N.M. G. 5879).

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264 frequently consisting of bread or porridge eaten rather late at night. The Ayr Tuareg have related terms for their meals:— (1) *tegingimt* which is a prepared meal eaten late in the morning. (2) *timekkelewt* which is the prepared meal taken at midday. (3) *temegimt*, late evening meal which is the main [272] meal in Ayr, as in Ahaggar. In addition to these meals there is a very light meal taken with tea immidiately after rising. It is known as *elfetur*.

[511] Incidentally there are Tuareg who do not have food enough to eat three times a day.

During times when Tuareg subsist exclusively on milk they have no regular meals. The amount [484] of milk needed to support life is very great, and it is drunk slowly during the day. On extensive journeys when the camels cross the barren deserts, the Tuareg also do not have regular meals as they do in their camps.

[Text continues on p. 255]

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Fig. 193a. Wooden eating bowl (*tayedat*) made by Ayr blacksmith. Ahaggar, the *Ajjer-en-rekk* tribe. Dimension: 0.095 m high, 0.253 m in diameter. (N.M. G. 5212).

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Fig. 193b. Wooden eating bowl (*alkadé*) manufactured by blacksmith from wood of the *ruyis* tree and provided with an iron handle. Ayr, blacksmiths of Damerga. Dimension: 0.43 m in diameter. (N.M. G. 6632).

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Fig. 196a–c. Plaited bowls in coiled technique. They serve as eating bowls for little children and are known as *tafakemt* (pl. *tifekam*).

a. Plaited from straw of *taleggit* (*Juncus maritimus*) by Tuareg woman. Ahaggar, the *Afuh-en-tehli* tribe. Dimension: 0.036 m high, 0.100 m in diameter. (N.M. G. 5215).
b. Plaited from straw of *taleggit* (*Juncus maritimus*) by Tuareg woman. Ahaggar, the *Dag Ralt* tribe. Dimension: 0.043 m high, 0.102 m in diameter. (N.M. G. 5214).
c. Plaited from straw by Tuareg woman. Ahaggar, the *Afuh-en-tehli* tribe. Dimension: 0.105 m in diameter. (N.M. G. 5844).

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Fig. 197. Small calabash (*tafakemt*) which serves as eating bowl for little children. Ahaggar, the *Afuh-en-tehli* tribe. Dimension: 0.055 m high, 0.095 m in diameter. (F.M. 145).

Crafts

Tuareg crafts clearly disclose traits belonging to distinct cultural levels. This may be seen from a brief description of the methods of fire-making.

Matches are in ordinary use nowadays, but they are used economically not only because they cost money but also because many Tuareg live far away from towns or trading posts where matches can be obtained. The embers of a fire smoulder for a very long time, and when the Tuareg want to light a fire they normally find embers under the ashes where their fire has been. Glowing wood is carried from one tent to another on a fragment of calabashes or earthen pots, and some Tuareg even take fire with them in this way during nomadic migrations. If a new fire has to be lit and matches are not available, most Tuareg use the well-known method of fire-making by means of flint and steel. This method is widely resorted to in Northern Africa even to-day, and is practised among the Tuareg of Ahaggar as follows:— The curved piece of steel (*énefed*) is placed over the three middle fingers of the right hand. It is struck against a small piece of flint (*tafarast*) held between the first and second fingers of the left hand together with a small piece of lighting material which may be a small piece of cotton cloth. However, the best lighting material (*tajjert*) is a piece of wood of *tefériyast* (*Echinops Bovei*), which has been boiled and thereupon beaten into a fibrous mass with a stone. The Tuareg keep this lighting material in a particular leather bag (*tayallabt*) together with the steel and one or two pieces of flint (Fig. 198). Lighting material according to Maire is also made from a plant named *térahit* (*Traganum nudatum*) (Maire 1933, p. 82). The spark produced by striking the steel against the flint causes the lighting material to glow, and after blowing on it or swinging it in the air, it is placed under a small bunch of hay which burst into flame after further heavy blowing. The use of flint and steel is not a very difficult method of fire-making, and I have used it myself on journeys when matches had come to an end.

The Tuareg do not generally use more primitive methods of fire-making nowadays. But they know an ancient method of making fire by rubbing a piece of hard wood (*agar* in Ahaggar, *agar* in Ayr; *Maerua crassifolia*) against a piece of soft wood (*turha* in Ahaggar, *turza* in Ayr; *Calotropis procera*). By this process they produce by hand rubbing a glowing dust which is brought into flame by means of lighting material and hay as described above. One of my informants among the Ayr Tuareg had produced fire according to this method. Lhote states that the method is at times used by the Tuareg of Ahaggar, where the hard ribs of date palm leaves are also used for starting a fire by rubbing (Lhote 1955a, p. 258).

Stone materials play a very little part in Tuareg crafts. Natural stones are used occasionally as

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Fig. 198. Flint (*tafarast*), steel (*tmefad*), and lighting material (*tajfert*). The lighting material, which is conserved in a leather bag (*tayalisht*), is made from wood of *tafdryast* (*Echinops Bovei*). Ahaggar, the *Kel-ahnet* tribe. Dimension of the steel 0.065 m long. (F.M. 134a–d).

412 tools, e.g., for hammering tent pegs into the ground, for rope making as described below, for separating the hide from the body when skinning a barbary sheep, and for crushing rock-salt, red pebber, dried tomatoes, tobacco, and the like. We have seen above that the Tuareg saddle querns used for grinding cereals are natural stones of a particular form and size, and that they are used for grinding without any particular fashioning, though sometimes treated with a hard stone or a piece of iron to make the [324] grinding surface more rugged and effective. The handmill is never manufactured by pastoral Tuareg (cf. p. 214 ff., Figs. 179–182).

412 172 Prehistoric quern stones and stone pestles are found in many regions of the Central Sahara and these ancient implements, I was told, are sometimes used by the Tuareg of Ahaggar for grinding and pounding (Fig. 200). The Tuareg also use the numerous neolithic stone axes (Fig. 199) as whetstones for iron knives. These axes are known to the Ahaggar Tuareg as *tadeft n ejenna*, that is "the axe of the rain (or the thunder)", and all Tuareg believe that they have fallen from the sky during heavy storms.

301 Stone material is still used for certain Tuareg ornaments, and notably for the well-known arm-ring (*ahleg* in Ahaggar, *ewekt* in Ayr) which is worn by most adult men and also by some boys. These rings are sometimes mentioned in literature as a weapon, but they are not well fitted for this owing [564] to their fragility. Most arm-rings are made from soft stone such as serpentine, and are manufactured by blacksmiths (Ineden)

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206a-d). The ordinary axe (*tafajt*) is used by all Tuareg who may also possess small adzes (*tastawt*), used mainly by women for the manufacturing of domestic implements such as spoons and milking bowls. These implements manufactured by Tuareg women are generally inferior in quality to those made by the blacksmiths, though certain noble women of the *Kel Rela* tribe make wooden milking bowls that are said to be superior to those of the blacksmiths. In Ayr, Tuareg women engage very little in wood-working, and the Ayr Tuareg are on the whole less skilled in crafts than are the Tuareg of Ahaggar.

Pastoral Tuareg are experts in rope making. Ropes made from various materials play an important part for the Tuareg for hobbling domestic animals, for fastening burdens transported on camels, as reins, for the erection of tents, and for a great many other purposes. Incidentally the Tuareg make substitutes for ropes in a very simple way. Thus if a man comes upon a camel which he wishes to take back to camp and has no rope or rein to lead it by he makes a lead from three or four pieces of palm leaf, or the like, attached to each other. It is stated by Maire that the Ahaggar Tuareg make simple

Fig. 206a-b. Earthen pots made by the sedentary *Imeggedesen* of Agadez.

a. A water jar with two spouts. It is known to the Ayr Tuareg and the Hausa-speaking *Imeggedesen* as *gelgelei*. It is used by this latter people but never by pastoral Tuareg. Dimension: 0.30 m high. (N.M. G. 6635).

b. Earthen jar used for water and also for cooking. It is known to the Ayr Tuareg as *tejiat or tiskin*, to the Hausa-speaking *Imeggedesen* as *tukunjiya or tuki*. Dimension: 0.285 m high. (N.M. G. 6634).

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Fig. 205. Painted earthen pot (*ákanef*) manufactured by the professional potmakers called *Ikenawen*. Ayr, Agadez. Dimension: 0.32 m high. (N.M. G. 6636).

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hobble ropes from straws of the *tulluli* grass (*Aristida pungens*) (Maire 1933, p. 62). For the manufacture of proper ropes the Tuareg may employ the bark of trees. Both in Ahaggar and in Ayr they use the bark of *Acacia Raddiana* (*abser* in Ahaggar, *afagag* in Ayr) for this purpose (Fig. 113). These ropes are made after much the same method as that used for the Ahaggar ropes of date palm bast (*asan*) and those of dum palm leaves made in Ayr. Ropes of this kind are always made by men, who, when making ropes from date palm bast, proceed in the following way:— Pieces of bast are soaked in water contained in a receptacle. They are thereupon torn into small strips about 20–30 cms long. These strips are rolled and twisted between the hands, and are kept in this rolled position under the foot until sufficient numbers of strips are available for the rope to be made. The ends of two rolled strips are then placed between the first and the second toes, and the strips are twisted together between the hands. New strips are added and twisted in this fashion until a suitable length of two twisted rows of strips has been made. This length is thereupon stretched over one of the feet, doubled, and twisted between the hands. It is usually hammered with a stone while resting on another stone or upon the bottom of a large mortar which is frequently used for support. The Ahaggar Tuareg make their hobble ropes in this way (Fig. 207), and the Ayr Tuareg apply the same technique to ropes made from strips of dum palm leaves which are also soaked in water before twisting. Both in Ahaggar and in Ayr this method may also be used for the manufacture of leather cords (Figs. 43, 73a).

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Fig. 207. Tuareg making a hobble-rope (*itfert*) of date palm bast (*asus*). Ahaggar, the *Kel Ifoi*.

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Fig. 208. The manufacture of a cord of goat's hair: (1) the hair (*Ahafiken*) is spun around a little stick (*aseggelem*). (2) The spun hair is trebled and twisted into a thread known as *tazawit*, or *tazagit*, between two sticks (*iseggelen*, sing. *aseggelen*). (3) The finished cord (*ahefken*) which is made by trebling the *tazagit* thread. Ahaggar, the *Aghal-ewtahil* tribe. Dimension of the *aseggelen* stick to the left: 0.41 m long. (F.M. 74, 120, 122).

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Fig. 210a–b. Two coiled baskets provided with lids.

[462] a. *takhalit*, basket plaited from pieces of palm leaves (*afum*) and reinforced with coloured leather (goat-skin). Manufactured by women of the sedentary *Kel Res* in Tasild-n-Ajjer, bought from blacksmiths at Tamanrasset in Ahaggar. Dimension: 0.13 m high. (F.M. 227).

b. *adebun*, basket plaited from pieces of palm leaves (*afum*). It is ornamented with coloured leather thread and with woollen yarn. Ahaggar, blacksmiths at Abelessa. Dimension: 0.205 m high. (N.M. G. 5837a–b).

283 This stick, which is held in the right hand, is turned around its own axes while the hair taken out from the mass with the left hand is occasionally moistened with water or with spittle. The stick upon which the hair is spun is known as *aseggelem*. I have noted in Ahaggar that a length of 50–60 metres of spun hair can be made in about twenty minutes. Such a lenght of spun hair is trebled and attached to two sticks also known as *aseggelem* (pl. *iseggelam*). It is twisted together by two women each holding one of the sticks, and may be conserved for some time before it is finally made into a rope by further trebling and twisting (cf. Fig. 208). Certain cords to be used in connection with riding camels (e.g., reins) are not twisted in the above manner, but are plaited (cf. Fig. 51). The spun hair is used for the manufacture of certain objects without twisting (cf. Fig. 167a–b). Lhote states that the hair growing on the knees and neck of barbary sheep is also used for spinning (Lhote 1955a, p. 319).

[237] [286] 288 * [545] [114] The Northern Tuareg spin camel's hair or wool (*teḍuft*) which is used for very few purposes (cf. p. 67). But camel's hair is sometimes mixed with goat's hair to be spun for thread used for a primitive type of weaving; true weaving is an unknown craft among the Tuareg while important to Arab pastoralists of the Northern Sahara. The Tuareg type of primitive weaving with spun hair is carried out with no other implement but the hand; it is used for small transportation bags known as *tirrar* (sing. *téreriri*), a word, according to Foucauld, derived from Arabic (cf. Foucauld 1951–52, IV, p. 1776) (cf. Fig. 209a–b). I have myself never had the opportunity to see how weaving of this type is done.

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A photograph illustrating a women making a bag from spun hair is reproduced by Lhote, who states that bags of this nature are rarely manufactured nowadays and are made exclusively by a few noble women of the *Kel Rela* tribe (Lhote 1955a, p. 319 f., pl. XV p. 384). This statement does not agree with information gathered by myself in Ahaggar, where I was told that bags were made from spun hair by Tuareg women of other tribes and notably by women of the *Iselʒamaren* class.

In Ayr spinning of cotton is performed mainly to obtain sewing thread, which is considered superior to European thread for sewing cotton clothes. To my knowledge most pastoral women do not spin their own cotton thread but buy it at the market of Agadez. However I have noted the existence of simple cotton bows in a *Kel Tédalé* camp in the northern part of the Ayr Massif. The occurrence of the simple cotton bow among the Ayr Tuareg should no doubt be viewed in connection with the use of this implement in the Western Sudan (cf. Lagercrantz 1950, p. 260 ff.) from where the cotton plant has also been introduced.

Coiled basket-work plays an important part with the Tuareg, particularly the Northern Tuareg who are experts in this technique which is related to sewing. A very primitive type of coiled basketry

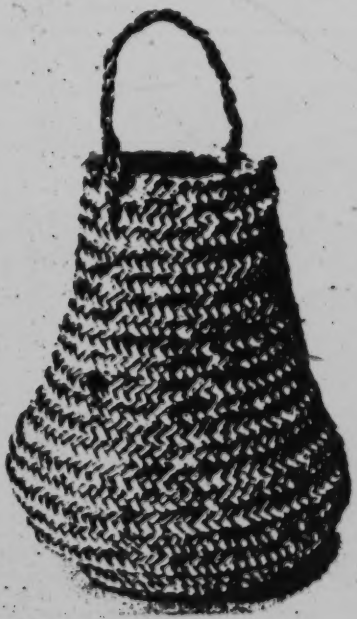

Fig. 211. Basket (*akgwegwar*) plaited from date palm leaves (*aghom*). The handle is of date palm fruit (*asan*). Ahaggar, blacksmith at Abalessa. Dimension: 0.38 m high. (N.M.G. 3839).

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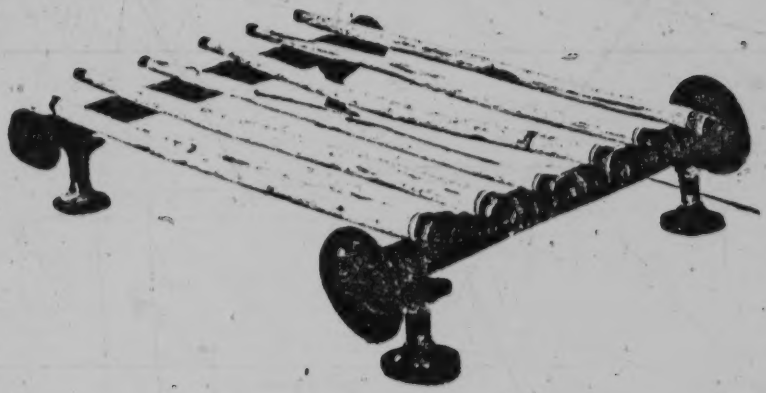

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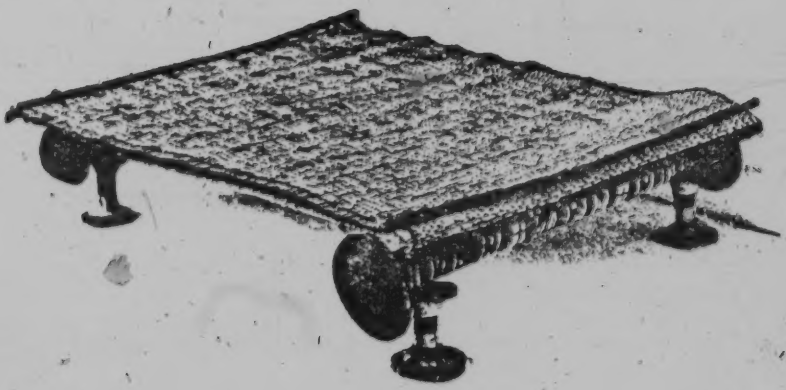

Fig. 212a-b. The large wooden bed (*tédabut*) which is used by all pastoral Ayr Tuareg.

a. The wooden skeleton consisting of the following parts:— (1) Four wooden legs (*tisetkelt*, pl. *tisetkal*). (2) Two horizontal cross-beams (*tabatukat*, pl. *tibatukatin*) carved into the shape of a disc at their ends. (3) Six horizontal poles (*afasat*, pl. *ifesasen*) resting in shallow grooves of the horizontal cross-beams. These poles are made from wood of a tree called *koriya*; this type of wood is also used for the heavy cross-beam seen in the front, while the hindmost cross-beam is made of wood called *tereza*.

b. The wooden skeleton covered with two mats (*tédabert*, pl. *tisebrin*) of *afezu* grass (*Panicum turgidum*). The stems of this grass are tied together with leather strips. Beds are frequently covered with three mats. Dimension of the bed: ca. 1.70×1.36×0.21 m. (N.M. G. 6640a–o).

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may be seen in Fig. 167a–b illustrating baskets used for the manufacture of butter-milk cheese in Ahaggar. True coiled basketry is sewn with a little awl (*tistent*) (Fig. 218a).

The technique of coiled basket work is used in the manufacture of a great many receptacles among the Tuareg of Ahaggar, and coiled basketry made and utilized by these Tuareg can be seen in Figs. 184, 185, 196a–c, 210a–b.

The Ayr Tuareg apparently do not make coiled basketry to a very great extent, but they know a technique related to that used in Ahaggar, and also sew with a small awl (*éstan*). The reason why so many Ayr pastoralists make very little coiled basketry work probably lies in the fact that plates, bowls, and other receptacles of this type can be obtained at the market of Agadez at very low prices.

In the manufacture of plaited basketry the Ayr Tuareg are experts. They use the leaves of the dum palm for plaiting a great many different articles such as tent-mats, containers, and the like. When large mats and similar objects are made, the palm leaves are always plaited into narrow bands which are sewn together with pieces of leaves by means of a large needle (*tasubla*) (Fig. 220b). Plaiting dum palm leaves is one of the most important tasks of women among the *Kel Ayr*. Pastoral Tuareg of Ahaggar in contrast to those of Ayr do not engage much in plaiting basketry, and I believe that most of them are unaware of this technique which is known to all sedentary agriculturists of Ahaggar. The plaiting material used by these people is date palm leaves (*aḍum*) from which they make mats, bags, and similar objects. Baskets (*alegutguten*) like that reproduced Fig. 211 are manufactured by sedentary agriculturists of Abalessa and are sometimes used by pastoral Tuareg. Another type of plaited basket is that illustrated Fig. 135. It is made from palm leaves and has two handles made from palm bast twisted into a rope which is sewn into the basket by means of the large needle (*tasugla*, or *tasubla*) (Fig 220b). This basket type (*tésenit*) is widely found throughout Northern Africa among sedentary people of the oases and in the Atlas. The sedentary agriculturists of Ahaggar use baskets of this kind for many different purposes, and they play a part in agricultural work, e.g., to carry fresh soil to the gardens (p. 191) and to remove soil when digging and cleaning out foggara canals.

The Tuareg have a third technique which can adequately be mentioned in connection with plaiting, namely the manufacturing of mats from the stems of the *afezu* grass (*Panicum turgidum*). These mats are made from straws placed parallel to each other and fixed together by means of strips of leather. These mats are known as *éxeber* or *téxebert* according to their use and size. They play an important part in Ahaggar where they are used as a kind of windscreen surrounding all tents, and they are manufactured by many women among the *Kel Ahaggar* (Figs. 268, 269). Mats of this type are also made by some Ayr Tuareg for cheese manufacturing (Fig. 168), but Tuareg women of Ayr practise very little this particular technique of mat making. Large mats made from *afezu* stems are used for bed covers, and in rare cases also for windscreens or sunshades, but these mats, which are found in all Tuareg camps together with the large wooden bed (*tekabut*) (Fig. 212a–b), are not manufactured in Ayr but in the south, particularly by women of the *Iḍdalen* Tuareg. Mats manufactured by this method are used for an interior cover of the barrel-vaulted mat-tent (Fig. 265d); these mats are also imported from the south.

The Tuareg are expert at skin and leather work which constitues the most important craft in the

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as *ahaga* (Fig. 213). Such tanning receptacles are made in the following way among the Ahaggar Tuareg:— A slender bough of the *tahaouk* tree (*Rhus oxyacantha*) is bent and fixed into a circular form, and a piece of camel's hide soaked in water is attached to this frame. Sand and pebbles are thereupon placed upon the hide within the frame, which is lifted upwards by means of cords fastened to it and to the bough of a tree. This is done to produce the bowl-like form of the receptacle which is left filled with sand and pebbles and attached to the tree for a few days. Thus it is dried by the sun, and thereafter it will become very hard and keep the desired bowl-like form. Certain butter-containers made from raw camel hide are manufactured on the same principle, the entrance to such containers being made by the insertion of a piece of wood around which the upper part of the piece of hide is firmly attached. The sedentary agriculturists of Ahaggar also use camel's hide for the manufacture of a long rope (*akhamil*), which is used for drawing water from wells by means of oxen when the *tamut* system of irrigation (Fig. 132a–b) is employed. A rope of this kind is made from strips of soaked hide twisted together and hammered between stones to be left for drying in the sun. It is also said that camel's hide in the north is used for sandals of a particular type, while the Ayr Tuareg may use raw oxe-hide for sandals (cf. p. 301). The Ayr Tuareg may also employ raw oxe-hide for the manufacture of ropes and cords, and for camel whips. The hides of camels and oxen are known to the Tuareg by the common term *ýrit* and they seem to possess certain qualities in common.

The hide of such animals as goats, sheep, gazelle, barbary sheep is never used untanned among the Tuareg, and they may tan the hide of oxen and various other animals.

The Tuareg use a particular method for tanning goat-skin to be used for water-bags (*abayor*) (Figs. 215–217). I have watched this, particularly in Ahaggar, where a water-bag is prepared in the following way:— The animal is killed in the normal way of cutting its throat, and is then so skinned that the hide comes off almost entire. This is done by making the following openings with the knife: the head is cut off, cuts are made around the lower part of all four feet, and on the inner side of the

Fig. 214. Tannin consisting of bark (*tiker*) of the *tamat* acacia (*Acacia seyal*) which is used for tanning water bags. The bark is left upon a piece of rock for drying. Ahaggar, the *Aghab-en-tahit* tribe.

[Text continues on p. 273]

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Fig. 216. Water bag (*abayor*). Ahaggar, Olufsen's collection. (N.M.).

hind thighs over the animal's anus. This latter opening is made big enough for the skin to be drawn 281
off the body forwards over the neck. When the hide is removed and has been cleaned by scraping with a knife, it is ready for tanning, which is done as follows:— The openings made on all four legs are [413]
closed simply by tieing the leg skin into knots, while the opening made on the inner side of the hind thighs is sewn together with straw by means of the awl (*tistent*) (Fig. 218a), the anus opening being closed with a cord tied around it. The hide is now closed except at the neck opening. It is filled with [824]
a mixture of water and bark (*tiñet*) of the *tamat* acacia (*Acacia seyal*), and the neck-opening is thereupon closed with a cord tied around it. The hide, which now forms a closed bag filled with bark and water, is placed in the shade of the tent for seven to ten days to be turned and shaken every day. The mixture of bark and water is thereupon poured out, the cuts sewn together or tied with knots are reopened, the inner side of the hide is cleaned and treated with butter, and the openings are closed again in a more solid fashion, the large hind opening being closed with strips of cotton placed over the incision and sewn together with leather thread by means of the awl. A water bag prepared in this way will very often contain reddish water, as the *tamat* bark yields a red colour, but nevertheless all Tuareg consider bark of the *tamat* acacia as the very best tannin for water bags. Bark of *abser* [824]
(*afagag* in Ayr) (*Acacia Raddiana*) and also bark of *tahamek* (*Rhus oxyacantha*) may be used for tanning water bags. Water bags are, with very rare exceptions, made from hairy skin because they keep the water cool and fresh. The large open irrigation pail (*aga*) is made from skin tanned with bark like [415] *
water bags, but to my knowledge bark tanning among the Tuareg is not employed for other articles.

[text continues on p. 275]

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Fig. 219a–d. Implements used for skin and leather work in Ahaggar.

a. Wooden cutting board (*elkeylab*). It is made from wood of the *tabwak* tree (*Balanites aegyptiaca*). 0.480 m long. (N.M. G. 5867).
b. Wooden implement (*asettema*) for smoothing leather. Wood of the *tabwak* tree. Dimension: 0.248 m long. (N.M. G. 5868).
c. Heavy black stone (*tazzat*) with level under side. Used for smoothing leather. Dimension: 0.079 × 0.061 m. (N.M. G. 5873).
d. Knife (*telmasit*). Dimension: 0.163 m long. (N.M. G. 5869). Manufactured and used by blacksmiths in Ahaggar, Abalessa.

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The vassal Tuareg of Ahaggar use hairy skin for the manufacture of certain receptacles other than water bags (cf. Figs. 111, 125). I have never seen hairy skin bags of this type in Ayr, and even in Ahaggar most skin bags are made from depilated skins. In Ahaggar the hair is removed from the hide by means of a plant known as *tachkat* (*Pergularia tomentosa*). A bundle of this plant is dipped into hot water and is rubbed against the inner side of the hide which is spread out over a large stone or a similar object. Even after one day the hair can then be removed by one or two women who pluck it with their fingers. In Ahaggar I have also been told by sedentary agriculturists that the hair can be removed by means of salt. The salt is placed upon the inner side of the hide and this treatment makes it possible to scrape away the hair by means of a knife or a stone. The Ayr Tuareg questioned about their methods of depilation place ashes from the fireplace on the inner side of the hide which after this treatment is covered with moistened sand for one day. After this treatment the hair is removed with a knife or simply with the fingers.

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The tannin generally used by the Tuareg of Ahaggar and Ayr for articles other than water bags

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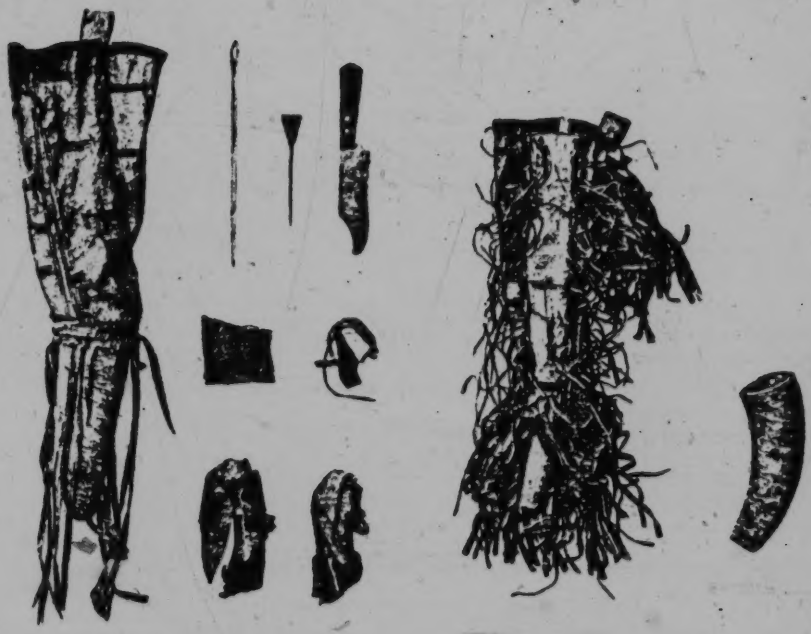

Fig. 220a–g. Sewing bags and their contents.

a. Sewing bag (*askegen*) made of decorated leather sewn to a piece of hollow ox-horn which constitutes the bottom of the bag. Dimension: 0.415 m long. Ahaggar, the *Dag Rali* tribe. – In the bag were the objects b–e.
b. Large sewing needle (*tazegla*, or *tasubla*).
c. Sewing awl (*tirtent*).
d. Leather knife (*telmasit*).
e. Four pieces of leather (*izzeman*) for repairs. (N.M. G. 5225a–e).
f. Sewing bag (*askegen*) of the above-mentioned type but richly decorated with leather fringes. Ahaggar, *Ifarrata* of I-n-dalag. Dimension: 0.335 m long. (N.M. G. 5241).
g. Ox horn (*isek*) cut for bottom of sewing bag (*askegen*). Ahaggar, *Ifarrata*. Dimension: 0.136 m long. (N.M. G. 5228).

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is fruit of the *taggart* acacia (*Acacia scorpioides*) which is known to the Ayr Tuareg as *tiggart*. The fruit is pounded into a kind of flour or powder which is mixed with water in the large tanning receptacle made from camel hide (Ahaggar) or in a large wooden or enameled receptacle (Ayr). For tannin the Ahaggar Tuareg also use leaves of the *tamat* acacia (*Acacia seyal*). These are collected as follows: a large bough is cut off the acacia, and is left to dry in a clean, sandy place. When the bough and its leaves have been dried by the sun for some time, the bough is beaten with a stick so that the leaves

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fall to the ground where they are collected. They are conserved dry until tanning takes place when they are pounded in the large mortar and mixed with water in the tanning receptacle. The Ahaggar Tuareg may also use galls of the *tabarekkat* tamarisk (*Tamarix aphylla*) (cf. Foucauld 1951–52, II, p. 885 & Maire 1933, p. 159) and fruit of the *tedjoq* tree (*Pistacia atlantica*) (Maire 1933, p. 149).

In addition to treatment with these vegetable tannins the skin is also treated with butter or rubbed with fatty substances, such as a piece of the brain of a slaughtered animal. These are the main features of skin tanning which in Ahaggar takes place in the following way:— (1) The hairy or depilated hide is placed in the tannin receptacle which contains one of the above-mentioned vegetable tannins mixed with water. The hide remains in this receptacle for one or two days if fruit of the *taggart* acacia is used, while three or four days will be necessary using *tamat* leaves known as *ala*. The hide in the receptacle is daily rubbed between the hands in order that the tannin may penetrate well into it. (2) When the hide is removed from the receptacle it is washed with cold water and thereupon dried in the shade.

Fig. 221 a–c. Skin bags.
a. Bag of *tirhahkwat* type. Ahaggar, Olufsen's collection. Dimension: 0.45 m long. (N.M. G. 1.134).
b. Bag known as *ebelbeg*. Ahaggar, the *Ajjak-en-tehli* tribe. Dimension: 0.36 m long. (N.M. G. 5239).
c. Bag of *tirhahkwat* type. Ahaggar, probably manufactured by Ahaggar Tuareg at Tamesna. Dimension: 0.30 m long – without fringes. (N.M. G. 5219).

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237 Ayr Tuareg a piece of ram's horn may serve as an amulet case attached around the upper arm. Horns
*[446] of barbary sheep are used for butter containers among the Northern Tuareg (cf. p. 223; Fig. 165), who sometimes use a piece of pointed gazelle horn for daubing antimony around the eye.

281 The Ahaggar women cut skin and leather with a small knife (*telmusit*), and a piece of wood (*asettenu*)
462 and/or a stone (*tazzet*) are used for smoothing the skin which is then placed upon a particular wooden
[443] board (*elkeyleb*) (cf. Figs. 219a–d). The Ayr Tuareg do not make so much refined skin work. Women
*[445] among the Northern Tuareg conserve their implements for skin and leather work in a particular bag (*askagen*) which is made from leather attached to a bottom piece of horn (*isek*) (Figs. 220a–g).

[531] Northern Tuareg women take a great interest in their skin and leather artifacts, which are richly decorated with fringes and hanging tassels, and with geometric designs in different colours. I have
386 noted the following colours among the Tuareg of Ahaggar and Tasilé-n-Ajjer:—
822 (1) *haba*, indigo which is introduced from the south in the form of balls.

(2) *tawnkent*, which is also known as *tafidet* and *tanezezzeft* according to Foucauld 1951–52, IV, p. 1934. It is a yellowish mineral which yields an entirely black colour frequently seen on ornamented skin bags. The mineral according to the Ahaggar Tuareg is introduced from the south, while the Tuareg of Tasilé-n-Ajjer claim that they obtain their minerals of this type from Serdeles north-east of Rat. – A black colour which is also known as *tawnkent* is said to be made by the Tuareg of Ahaggar in the following way:— Pieces of iron are put into water contained in some small receptacle, usually a tea glass. This receptacle containing water and iron pieces is covered with a bowl or a similar object in order that the sun light cannot penetrate. After a few days the water turns into a black colour to be used for skin dyeing.

(3) *semento*, a green colour derived from a mineral or a powder introduced from the south. According to some Tuareg this green colour is also made by means of a vegetable powder introduced from the north, from the region of Mzab.

(4) *khodarbas*, a powder which yields a green colour. It is said to be introduced from the south (from Tawa) and to derive from a tree known as *tafnit*.

● [524] (5) *errummen*, the fruit of the pomegranate tree known as *terrummont* (*Punica Granatum*). It is used with a white mineral (alum), known as *azref n Tawat*, and introduced from In Salah. Parts of the pomegranate fruit and of this mineral are mixed with water to be used for a yellow or yellow-brown dye which is applied to many decorated skin bags for ground colour.

(6) *temesaruak*, a mineral introduced from the north (Mzab). It produces a yellow colour.

[243] (7) *herki*, a reddish brown colour obtained from a particular type of sorghum known as *tallat* grown in the cultivation centres of Ahaggar.

(8) *tékersé*, a white colour obtained by placing the skin for about three days in a container with fresh milk to which a little salt is added. – Among Tuareg of Tasilé-n-Ajjer I was told that a white colour is also obtained from a kind of powder introduced from the Sudan.

386 Before use these above mentioned colours or dyeing materials are generally dissolved in water
[53] contained in a tea glass. When they are employed for the very fine geometric designs of leather bags they are daubed with a small knife known as *telmusit* (Fig. 219b).

[439] It is interesting that most dyes used by the Northern Tuareg are introduced from the north or from the south,

[Text continues on p. 284]

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Fig. 228a–c.

a. A cylindrical hollowed piece of wood covered with leather. It is known as *tafendit* and serves to contain antimony (*tazult*). Ahaggar, blacksmiths of Abalessa. Dimension: 0.22 m long. (N.M. G. 5875).

b. Cylindrical brass tube covered with ornamented leather. It is known as *faralu wa n tuka* and serves for the conservation of *tuka*, that is ashes of burned *afezu* grass (*Panicum turgidum*). Ashes of this grass are used by some Tuareg for chewing tobacco. It is said in Ahaggar that containers of this type are made exclusively by noble women of the *Kel Rela* tribe, and that the containers should be worn only by noble Tuareg and not by vassals. The brass tube is always made by blacksmiths. Ahaggar, blacksmiths of Abalessa. Dimension: 0.265 m long (total length). (N.M. G. 5888).

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c. A piece of cane covered with coloured leather and fringes of the same material. It is called *tafendit* and serves for the conservation of *tazult* (antimony). Ahaggar, the *Ajjah-en-tehlé* tribe. Dimension: 0.116 m. (N.M. G. 5267).

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the south, or are obtained from plants grown by sedentary agriculturists. The technique of skin dyeing as practized by the Tuareg nowadays cannot be considered an ancient one in Tuareg culture. Its origin is probably to be looked for in the more developed civilizations of Northern Africa, and not in a nomadic culture like that of the Tuareg. Other dyeing methods known to the Tuareg may well be very ancient. I believe this to be true of the red ochre known to the Ahaggar Tuareg as *tamegkeyt*,

[text continues on p. 288]

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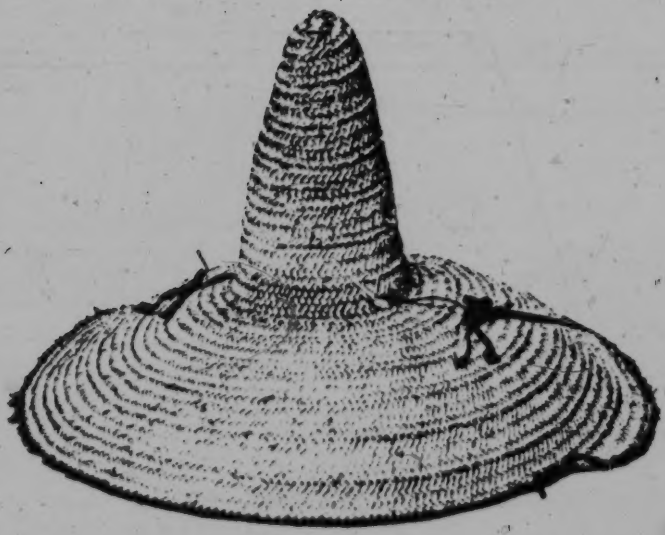

Fig. 231. Woman's straw-hat (*idié*) plaited from straps of date palm leaves (*ajum*). Ahaggar, the *Dag Rali* tribe; manufactured at Abalessa. Dimension: 0.565 m in diameter. (N.M. G. 5276).

386 to the Ayr Tuareg as *tamezgoyt*. It is found both in Ahaggar and in Ayr, and is used for dyeing tent-skins (cf. p. 361).

289 A number of the most common skin bags and similar objects of decorated leather work made by
462 Tuareg women in Ahaggar are reproduced in Figs. 220–229.
* [465] Though the pastoral Tuareg women in the north are excellent leather workers they find their superiors
[564] in the blacksmiths women and those of the *Imeggedezen* of Agadez. Women of these sedentary negroid groups provide pastoral Tuareg with leather objects like sword-sheaths, amulet cases, leather purses, large saddle bags, cushions, and the like (cf. Figs. 72a, 76, 121a–b, 172a–b, 198).

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Each row of forked poles has a lath resting horizontally in the prongs. This lath is called *éseger* (pl. *ágar*).

Two rows of boughs are fixed to the laths as a base for the roof covering. These boughs are known as *ibezarən* (no sing.). They rest with one end upon the central lath, the other end upon one of the outer laths. As the row of forked poles which carry the central lath is frequently somewhat higher than the two outer rows, the *ibezarən* boughs may be fixed in a somewhat sloping position and thus form a slightly elevated saddle roof which is covered with various kinds of plant material (e.g., palm leaves).

The walls of the hut consist of slender vertical sticks fixed in the ground and surrounded by simple mats (*asaki*) made from the stems of the *afezu*-grass (*Panicum turgidum*). The huts have only one door-opening which is generally made at one of the narrow ends.

The *téjira* hut is frequently a very spacious one, and in general it is so high that a grown man can easily stand upright in it. The poles used for the hut are rather heavy and the structure is built by the men, while most other dwellings used among the Tuareg are erected by women.

A.5.b. The square or rectangular hut found among sedentary agriculturists of Ahaggar and Tasilé-n-Ajjer is called *ákeber* (pl. *ikebran*). In Tasilé-n-Ajjer similar huts are also used by certain pastoral Tuareg, though their huts generally are round and provided with a conical roof (cf. A.6, p. 335 ff.). In Ahaggar square or rectangular straw-huts are not generally used by pastoralists, though they may be found among certain noble Tuareg when they camp in the lower country where building material is available.

Most huts are almost square and in size up to about 6 × 6 metres so that they are generally somewhat bigger than the *téjira* hut just mentioned. One hut seen in Tasilé-n-Ajjer had a structure very much like that of a *téjira* hut with a slightly elevated saddle-back roof. The *ákeber* hut of Northern Tuareg country usually has 9 forked poles buried solidly in the soil, forming three rows of poles

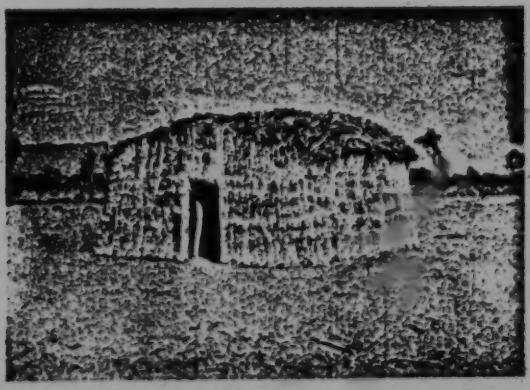

Fig. 269b. The *téjira* hut structure covered with mats a few days later. Ayr, Iferwan.

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Fig. 250. A square *ékeber* hut covered with bulrush. Ahaggar, Amsel.

parallel to each other. The middle pole of the central row of poles is somewhat higher than all the other poles, connected with each other by means of laths resting in the prongs to form a square frame, which may be supported by one or two subsidiary forked poles if considered necessary. Slender boughs or laths are fastened to the horizontal laths and to the top of the forked central pole, and other slender boughs are placed over them to form the foundation of the roof-covering which consists of plant material. If bulrush is available this material is preferred, but hay of various grasses is also used. The walls of the hut are generally covered with the same material as the roof. If walls are covered with bulrush its very long stems are placed vertically around the hut-frame and attached to it by means of one or two horizontal bands of the same material (cf. Fig. 250). If hay of grasses (e.g., *tulhult*; *Aristida pungens*) is employed for wall covering it is necessary to insert boughs or sticks leaning against the square frame to support the bunches of hay which are kept to the wooden structure by means of cords. I was told by old people of Ahaggar that the square *ékeber* hut was introduced to Ahaggar with the immigration of the *Kel Ĝanet*. This is very likely, for I have seen identical huts at the oasis of Ĝanet and also among some pastoral Tuareg of Tasilé-n-Ajjer. Some huts have only one entrance which is placed at the middle of one of the walls, but huts may also have two openings sited opposite to each other to provide a current of air. The door-openings can be closed by means of a shutter made from bulrush, grass-stems, or palm material. The square *ékeber* hut is generally so high that grown people can stand upright within it.

[824]

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Huts akin to the square *ékeber* hut of Northern Tuareg country seem to have a rather wide distribution in adjacent parts of North Africa. They are used in the Fezzan from where they have been described in some detail by Scarin and Despois (Scarin 1934, I, p. 110 ff. Despois 1946, p. 80 ff., pl. XIX–XXI). It is possible that square huts of the *ékeber* type also occur at El Golea in the north of Algerian Sahara (Collection Photographique du Musée de l'homme, 34.1019.222), at Ksar El Azoudj of Oued Zousfana south of Monts des Ksours of the Sahara Atlas (Collection Photographique du

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Fig. 255. A half-finished beehive hut (*aṭṛam*). Its main structure consists of boughs fixed in the ground and tied to each other at the top. The hut is surrounded by a mat made from *afezu* grass (*Panicum turgidum*). Ayr, Iferwan.

camp for some time. But even in this case it seems as if beehive huts are rare, and I have only seen one deserted hut of this type among pastoralists.

A.8.b. A beehive hut structurally close to the above-mentioned *aṭṛam*, used among pastoralists, is also found among sedentary people of Ayr, particularly among farmers of the *Kel Ewey* group. The structure consists of bent boughs lashed together at their tops, but between these boughs heavier sticks are fixed in the ground and slender rods are horizontally attached to the bent boughs and the sticks to support a simple grass mat drawn around the hut. This may perhaps be seen from the photograph Fig. 255 which shows an almost finished hut of this type. However, the beehive hut used by most Ayr farmers has a more elaborate structure which will now be described.

A.8.c. The beehive hut generally seen in Ayr is called *taṭṛamt*. Its basic elements are four arches, termed *igegan* (sing. *egegu*), made from slender rods lashed together with strips of dum palm leaves. The slender rods may be the midribs of date palm leaves, but rods of *ébezgin* (*Salvadora persica*) are generally preferred for arches. Two arches made in this way are placed parallel to each other and with a very short distance between them. They are not buried in the ground, but are fastened to short heavy poles (*iseḳṣan*, sing. *aseḳṣu*) fixed solidly in the ground. The two other arches, which are fastened to similar poles and placed parallel to one another, cross the first pair of arches at a right angle.

In addition to these four arches there are four semi-arches, also made from bundles of lashed rods

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lashed together to form arches are manufactured by the Ayr women, or are imported from the south by the *Kel Geres* Tuareg when they visit Ayr at the end of the rains. The arches manufactured by the Ayr women are made from the very long horizontal roots (*idkéwt*) of the *afagag* acacia (*Acacia Raddiana*). Pieces of root of suitable size are placed over an open fire for a while, and are thereupon bent into the desired curve which is secured by cords. When the root pieces thus treated become dry they will retain their curved form; the cords are then untied and the root pieces fashioned with a knife. However, wooden arches imported by the *Kel Geres* are used by many Ayr Tuareg who claim that these arches are superior to their own. They are said to be manufactured from boughs (or roots?) of a tree known as *tarnumiya*, which does not grow in Ayr but in the *Kel Geres* country.

(2) Parallel to the three arches there are two pairs of cross-bars supported by vertical sticks, a pair being placed at both sides of the arches to form the narrow sides of the dwelling. These cross-bars are termed *izgar* (sing. *éseger*). They are sometimes made by blacksmiths, and are then provided with various ornaments including a little discus-like thickening carved at the middle of the bar. In fairly large tents each cross-bar is supported by four vertical sticks, the two middle ones of which are generally forked, while the two outer sticks are somewhat higher and attached to the cross-bar with cords. All these vertical sticks, including the outer ones which have no prongs, are termed *tigettewin* (sing. *tégettewt*). In smaller tents there are only two or three sticks supporting the cross-bar. The vertical sticks used to support the cross-bars are normally very simple. Sticks of the very light *turza* tree (*Calotropis procera*) are preferred.

(3) Over this skeleton of arches and cross-bars supported by vertical sticks are placed a number of slender curved rods which are termed *ilellewan* (sing. *alellewa*). These rods are made from acacia roots, as described above, or are rods of the *tarnumiya* tree imported from the south. These rods form semi-arches in the longitudinal direction of the tent. Each of these semi-arches consists of two identical rods fastened to the horizontal cross-bars at their thick end, while at their thin ends they are lashed together and fastened to the true arches. There is always a considerable number of these slender semi-arches, normally about ten.

The Ayr Tuareg use the following types of mats to cover the upper part of the dome-shaped structure:— *iwerweren* (sing. *éwerwer*), the mats made from plant stems tied to each other with leather thread (cf. p. 350); *itfal* (sing. *ésefel*), mats of an oval shape plaited from dum palm leaves; *asalemamas*, a long narrow piece of mat made from dum palm leaves. In addition there is the term *érell* which designates the long narrow mat plaited from dum palm leaves surrounding the lower part of the tent structure. In very hot weather this mat is omitted so that currents of air may pass through the dwelling, while the tent is closed when it is cold, or during storms. A tent as that described has a dome-shaped or barrel-vaulted superstructure, the ground-plan being almost rectangular. A tent of normal size will measure about 3.00×4.50 m with a height of 1.80 to 1.90 m.

The mat tent is erected by one or two Tuareg women in the following way:—

(1) The ground is cleared; (2) The large wooden bed (*tédabut*), which is used everywhere in the south, is placed upon the ground to facilitate measuring; (3) Two large pronged posts, which serve to carry woman's riding cushions and various large skin bags, are placed behind the bed and fixed into holes dug by means of some iron implement, e.g., the cooking tripod, the broad end of a lance,

[text continues on p. 353]

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suitable natural boughs are abundant. There are advantages and disadvantages in mat tents as well as in skin tents. During the very hot season the mat tent is by far the best type of dwelling; it is comparatively high and the mat covering is not heated to any great extent by the sun. During the rainy season the mat tent is less practical than the skin tent. Rain may fall so heavily and abundantly that it penetrates the mat covering, and even if it does not it will be necessary to remove all mats after a heavy shower in order to dry them in the sun. The skin tent is normally erected quicker than the mat tent, it protects efficiently against rain, but is, on the other hand, most unpleasant during the hot season. It does not seem possible to explain the distribution of mat tents and skin tents on purely geographical grounds, but it seems as though the mat tent is used mainly where dum palm leaves for plaiting are available. Where the dum palm disappears, the mat tent tends to disappear also, though mat tents, as we have seen, may be provided with a covering of *ẽwerwer* type (p. 350 f.). Outside of the dum palm area most Tuareg have skin tents for portable dwellings. Within the dum palm area mat tents and skin tents are mixed in certain regions, and it has been seen that certain Tuareg use mat tents during the very hot season before the rains, but adopt skin tents when the rains start. This seem to indicate clearly the advantage and the disadvantage of the two dwelling types. But the advantages of both dwellings can be obtained in another way, namely by placing a sheet of skin over the top of the mat tent in the rainy season. This is actually done by many Tuareg. I was told that the *Kel Fadaγ* Tuareg around Ingal very frequently cover their mat tents with skin during the rainy season, and remove the skin again when the rains are over. It is perhaps this to which Rodd refers in a brief note on Tuareg tents in Ayr (Rodd 1926a, p. 212), and we may be sure that the usage is a very ancient one in these regions, for it is mentioned already by Ibn Batutah in reference to the *Bardamah*, who are stated to be nomads that frequently move their camps (cf. Ibn Batutah IV, p. 437). The custom of covering mat tents with a sheet of skin has also been noted in the case of the *Iwllemmeden* Tuareg by Barth (Barth 1857-58, I, p. 397 f.). It is very possible that it is still more widely known in Southern Tuareg groups, as it allows in an easy way the advantages of both types of dwellings.

B.2. *Skin Tents.*

Skin tents are used by Tuareg in all groups, though there is some doubt as to the use of skin tents among the *Kel Geres*. I have myself previously stated that they have skin tents (Nicolaisen 1959, p. 118), this statement being based on information gathered in Ayr 1955. Lhote also mention that some *Kel Geres* use skin tents, while other pastoralists in this group own mat-covered tents (cf. Lhote 1947a, p. 79, phot. 51 p. 80-81). But when I visited the camp of the *Kel Geres* drum-chief in 1959 he claimed that the *Kel Geres* always live in mat tents. As to the *Kel Ayr*, skin tents are very rare among them. In all other Tuareg groups skin tents play a very important role. They constitute so to speak the only kind of portable dwellings among the Northern Tuareg and the *Kel Aδrar*, and they form the most common type of tent also in the two groups of *Iwllemmeden* Tuareg. Zeltner says that the dividing line between skin tents and mat tents in Southern Tuareg country follows the Paris Meridian (Zeltner 1914a, p. 364), but there is in fact no true dividing line between these dwelling types, which are sometimes used by the same people at different seasons, and the two tent types are sometimes combined into one, as mat tents may be covered with skin throughout the rainy season.

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Fig. 270. An arched barrel-vaulted tent covered with a sheet of skin. In the background two arched mat tents. In the foreground to the left two cotton bows. Ayr, the *Kel Tédalé* tribe.

*342 true structure, and structurally there is a great diversity of tent types. It seems as if these tent structures can be divided into a few main groups which I shall describe in detail.

B.2.a. *Skin tents of arch construction.*

Tents which have one or more arches, generally placed at right angles to the longitudinal direction are widely found in Tuareg country. They are in fact more common than appears from the literature which has been so far published on Tuareg culture. The wide distribution of this particular structure in skin tents is interesting, the more so as it is related to the structure of mat tents. There are the following types of arch structures:—

B.2.a.1. This tent was seen in a camp of the *Kel Tédalé* Tuareg of North-western Ayr. It is known that skin tents are found among them (cf. Joubert 1939, p. 252 f.), but they have never been described. The Ayr Tuareg say that in the past many Tuareg of the *Kel Tédalé* lived in skin tents which, however, are less common among them nowadays. This agrees with my own experience. I have visited several *Kel Tédalé* camps, but I have only seen the skin tent here mentioned. This was found in a camp of three tents, the two others being ordinary mat tents. The skin tent I saw in this camp was also of the normal structure used for mat tents in Ayr, though shorter. The lower part was partly covered, not by a mat plaited from dum palm leaves, but by an *afezu* mat.

B.2.a.2. Under this heading I describe two identical tents seen in a camp of *Iregenaten* Tuareg who belong to the Ahaggar federation but have their traditional grazing grounds west of the Ayr Massif in the Tamesna Plains. The camp was actually situated in the region between Tegidda-n-tésemt and I-n-abanṭerit, where perennial vegetation is extremely scarce and mainly comprises scattered *tamat* acacias (*Acacia flava*). The camp visited had eight skin tents among which were the two of arch construction as follows:—

Both tents were very small, and their wooden structure was made of boughs of the *tamat* acacia (*Acacia flava*). In the middle of the tent and at right angles to its longitudinal direction there was an

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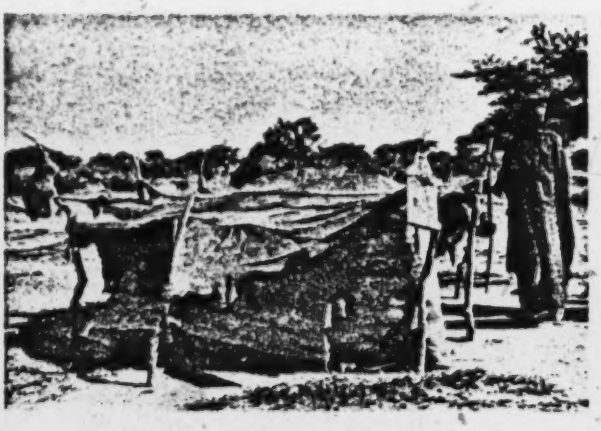

Fig. 272. Skin tent of the B.2.a.3. type belonging to *Kel Dennek* blacksmiths camping in Ayr near Agadez.

*342 of its ground area. The blacksmiths said that in their homeland at Twa only very small tents had central arches, while large tents had central T-shaped posts, but this latter structure could not be used in small tents because of the very large wooden bed. Tents of this type have not been described by Nicolas from the *Kel Dennek*, and various people who know this area have told me that they have never seen there tents of arch construction.

B.2.a.4. The tent type to be described is of arch construction. It was formerly very common in Ahaggar, but is extremely rare nowadays. The sheet of skin rests upon two arches placed parallel to each other at right angles to the longitudinal direction, and upon two horizontal cross-bars each lying on a pair of forked sticks. These wooden elements are normally made of the *tabarekkat* tree (*Tamarix aphylla*), the arches being manufactured from its roots which are heated over the fire and attached with cords in their bent position, as has already been described from the Ayr Tuareg, who make arches of acacia roots for mat tents in this way (cf. p. 351). But the arches used in Ahaggar are made from one piece of root each, and not from two pieces lashed together as in Ayr. The arches thus made are known as *iǧeǧan* (sing. *aǧeǧu*), but the term *tiheknin* (sing. *téhakent*) is generally used by vassals of the tribes *Aǧuh-en-tehlé* and *Dag Rali*. Though the arches are made from a single piece of root they may be fairly large, and two arches which are now in the Musée de l'homme in Paris have, according to Lhote, a diameter of 1.70 metres (cf. Lhote 1947a, p. 43; Musée de l'homme, Coll. H. Lhote 1941). The cross-bars horizontally placed at both sides of the arches are called *ireǧeraǧaten* (sing. *areǧaraǧa*), and the forked sticks which support them *tiǧeǯǯewin* (*iǧeǯǯewi*). Foucauld states that the two horizontal cross-bars resting upon forked poles do not properly belong to the tent structure, so that the sheet is supported only by the two arches which are placed parallel to each other at a distance of about 1.50 metres (Foucauld 1951–52, I, p. 247 f.). These two arches are also mentioned by Benhazera without any reference to horizontal cross-bars (Benhazera 1908, p. 26). However, my

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investigations seem to prove that the cross-bars with their upright forked poles form part of the structure, but the sheet may not always be supported by the cross-bars, as the suspension of the sheet in hot weather may be so elevated that the sheet rests only upon the arches which are somewhat higher than the cross-bars. Traditionally, the sheet is attached to the system of twelve poles mentioned above (cf. p. 364).

B.2.a.5. This tent, used in Ahaggar, is made up of the same structural elements as the above mentioned type, but the two arches are placed parallel to the longitudinal direction and at right angles to the two outer cross-bars. The Tuareg claim that this type is not a traditional structure. The arches, they say, should traditionally be placed at a right angle to the longitudinal direction and not parallel to it. I have only seen one tent of this type, namely in the *Amenukal's* camp close to Abalessa. The two arches in this case were not made of tamarix roots but of slender palm-fronds lashed together with cords. The arches were about 1.10 m high and 0.90 m in width (cf. Fig. 273).

The following two tents used by the Ahaggar Tuareg are hybrid types which seem to be used mainly in the *Aguh-en-tehlé* tribe where I have seen a few:

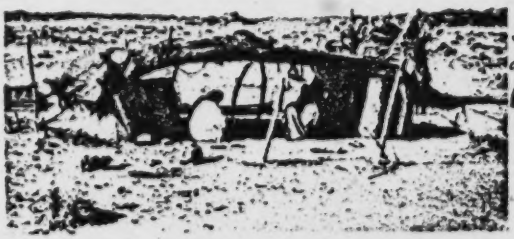

Fig. 273. Skin tent of the B.2.a.5. type. Ahaggar, the *Kel Rela* tribe.

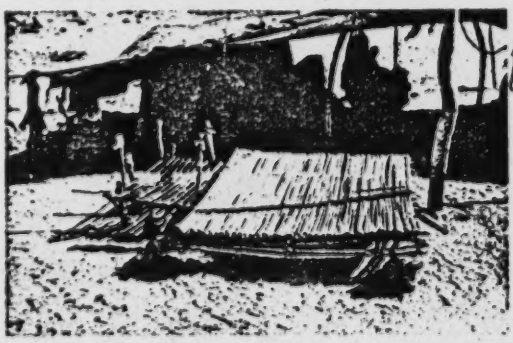

Fig. 274. A close-up of the above tent (Fig. 273). In the foreground are beds for a married couple and a child. Such beds made of palm leaves' ribs are rare among pastoral Tuareg. Ahaggar, the *Kel Rela* tribe.

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upon this structure is attached to poles fixed in the ground at the sides (cf. Lhote 1947a, p. 84 ff., 123 ff., 154 f., photographs Nos. 59–65, p. 96–97). 342*

B.2.f.2. This type, described from the *Iwllemmeden Kel Ataram* by Lhote, is similar to the above-mentioned type but has four pairs of forked sticks provided with cross-bars. The two middle pairs of uprights are somewhat higher than the two outer pairs. This structure is used for particularly large tents among the Western *Iwllemmeden* (cf. Lhote 1947a, p. 85).

Lhote says that the above-mentioned two types of structure are also found among the Kel Aḍraṛ (Lhote 1947a, p. 108 f.) and this would also seem quite natural in view of the fact that these Tuareg once formed part of the *Iwllemmeden* group. Cortier says that the *Kel Aḍraṛ* have tent structures of uprights with horizontal cross-bars (Cortier 1908, p. 327 f.). I have myself been told by Iforas Tuareg whom I met in Ahaggar that they possess tent structures similar to those commonly used in Ahaggar nowadays, and these Ahaggar tents resemble those described from the *Iwllemmeden* by Lhote. I shall now describe these structural types of Ahaggar.

B.2.f.3. This tent, which has three pairs of uprights carrying horizontal cross-bars, has been frequently described and depicted in literature. A most valuable description, with many photographs showing the wooden structure, has been published by Lhote in his book on Tuareg tents (Lhote 1947a, p. 34 ff., photographs Nos. 1, 5, 7, 8, 13, 20, 27, 36, 37). The structure is also described by the same author in his general work on the Ahaggar Tuareg (Lhote 1955a, Fig. 22 p. 254). I present my own observations from Ahaggar, where I have lived in such tents over extremely long periods. A tent which I measured among the noble *Kel Rela* may be taken as an example of the normal structure of this type. It was made from boughs of the *tabarekkat* tamarisk (*Tamarix aphylla*) which is generally used for wooden tent structures in the north. The boughs had a diameter of about 0.05–0.07 m, the upright poles being somewhat thicker than the horizontal cross-bars. The three pairs of uprights had small prongs to which the cross-bars were firmly attached by cords of goat hair. The cross-bars were slightly curved, as is normal for this structure. All three cross-bars are called *ireɣeraɣaten* (sing. *areɣaraɣa*). The two pairs of outer poles are termed *tiɣeǰǰewin* (sing. *téɣeǰǰewi*), while the middle pair of uprights are called *iɣetten* (sing. *aɣet*). Lhote gives the name *tamankayt* to the middle pair of sticks (cf. Lhote 1955a, Fig. 22 p. 254), but this is not correct as the term *tamankayt* is used properly for a central T-shaped post to be described in the next section. The sheet rests upon the structure of uprights with their cross-bars, and pieces of old cotton are normally wrapped around the place where the cross-bars rest in the prongs in order that the sheet may not be galled by the prongs. It should be noted that the cross-bars are lashed separately to their uprights, and not by longitudinal cords as among the *Iwllemmeden Kel Ataram*. A piece of cord is tied around the end of a cross-bar and around one of the prongs of its uprights, and is then drawn along the cross-bar to be tied around its other end resting in the prong. All upright poles are fixed in holes dug 0.30–0.50 m deep in the ground, like the holes for the outer poles to which the sheet is fastened with cords of goat hair. [122] [124] [114]

B.2.f.4. This tent differs from that just described in that it has two equally high pairs of uprights in the middle of the tent. These middle uprights (*iɣetten*) are higher than the two pairs of outer uprights (*tiɣeǰǰewin*). There are in other words four parallel pairs of uprights carrying cross-bars which are frequently slightly curved as in the above-mentioned structure. This structure, with an additional pair

Fodder Plants of Ahaggar

The most valuable fodder plants in Ahaggar are mentioned in the lists below where my own material has been supplemented with information collected by Maire and published in his valuable study of vegetation of the Central Sahara (Maire 1933 & 1940). The abridgements *Tr.*, *L.M.*, and *U.M.* refer to Maire's botanical zones:— the *Tropical Zone*, the *Lower Mediterranean Zone*, and the *Upper Mediterranean Zone*, while the letters *a*, *b*, and *p* stand for "annual", "biennial", and "perennial" plants.

FODDER PLANTS OF CAMELS, SHEEP, AND GOATS

tahlé (*Typha elephantina*). Tr. p. Young shoots eaten by sheep and goats. Generally not eaten by camels. Maire gives similar information (Maire 1933, p. 52).

ébestew (*Imperata cylindrica*). Tr., L.M. p. Not much eaten by camels (Maire 1933, p. 54).

ézereg (*Rottboellia hirsuta*). Tr. p. "Excellent pâturage en hiver, tant pour les chameaux que pour les ovins, caprins et autres herbivores (Voinot)" (Maire 1933, p. 54).

téberimt (*Andropogon laniger*). Tr., L.M. p. "Cette plante est mangée par les chameaux" (Maire 1933, p. 55).

afezu (*Panicum turgidum*). Tr., L.M. p. Very important fodder plant for all animals – particularly when green. The green grass is cut by the Tuareg who give it to their riding camels resting in the camp. – "La plante est un élément important de la nourriture des chameaux" (Maire 1933, p. 58).

talenfezut (*Pennisetum dichotomum*). Tr. a. & p. (cf. Gram 1935, p. 57). "Cette plante est mangée par tous les herbivores domestiques" (Maire 1933, p. 58).

arenumud (*Aristida plumosa*). Tr. a. & p. According to Gram perennial (Gram 1935, p. 54), according to Maire generally annual in the Central Sahara, while perennial in the Northern Sahara (Maire 1933, p. 61). An important fodder plant for all animals. – "Elle constitue un excellent fourrage pour les chameaux" (Maire 1933, p. 61).

tullult (*Aristida pungens*). Tr. p. Found in lower parts of the tropical zone, particularly on the northern outskirts of Ahaggar (including Ahnet) and in Tassilé-n-Ajjer. A very important fodder plant for all domestic animals. The Tuareg cut it green, or dry, to use it as fodder for their camels on caravan journeys through barren desert country (e.g., on journeys from Ahaggar to Tidikelt). – "Elle constitue, particulièrement au moment de la floraison, un excellent fourrage pour les chameaux et les autres herbivores domestiques" (Maire 1933, p. 62).

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824 *taɣamayt*, or *aharay* (*Danthonia Forskahlei*). Tr., L.M. a. & p. (cf. Gram 1935, p. 55). An excellent fodder plant for all animals. – "Excellente nourriture pour les chameaux et les autres herbivores domestiques" (Maire 1933, p. 65).

taɣamayt, or *awkraz* (*Cynodon Dactylon*). Tr., L.M., U.M. p. Fodder value like *Danthonia Forskahlei* (cf. Maire 1933, p. 65).

taysest, or *tagsest* (*Eragrostis bipinnata*). Tr., L.M. b. or p. (cf. Gram 1935, p. 55). Fodder plant of little value. – According to Maire very little eaten by camels (Maire 1933, p. 67).

tahalema (*Schismus calycinus*). Tr., L.M. a. "Excellente nourriture pour les moutons, les chèvres et les chameaux" (Maire 1933, p. 69).

tanesmimt (*Rumex vesicarius*). Tr., L.M., U.M. a. Particularly common in Atakor. An extremely valuable fodder plant. – "La plante est mangée par les herbivores . . ." (Maire 1933, p. 78).

aresu (*Calligonum comosum*). Tr. p. "Cette arbuste constitue un excellent pâturage pour les chameaux, surtout lorsqu'il est en fleurs. Il est, par contre, peu apprécié des autres herbivores" (Maire 1933, p. 79).

tawit (*Chenopodium Vulvaria*). L.M., U.M. a Eaten by all animals.

aggawit (*Chenopodium murale*). Tr., L.M., U.M. a? Eaten by all animals.

aramas (*Atriplex Halimus*). Tr., L.M., U.M. p. Eaten by all animals. The plant is saliferous, but not very nourishing. Because of its salt content it is particularly valuable for camels. – "La plante est mangée par les chameaux et les autres herbivores" (Maire 1933, p. 81).

uhas (*Bassia muricata*). Tr., L.M. a. (p.) (cf. Gram 1935, p. 39). "Bon pâturage pour les chameaux et autres herbivores" (Maire 1933, p. 81).

tirbar (*Suaeda vermiculata*). Lower desert country. a. "Cette plante est peu appréciée des chameaux, elle leur donne des coliques lorsqu'ils l'absorbent à jeun. Elle est également peu mangée par les moutons et les chèvres (Voinot)" (Maire 1933, p. 82).

tassak (*Nucularia Perrini*). Tr. p., evergreen. "Cette plante est appréciée des chameaux, beaucoup moins des autres herbivores" (Maire 1933, p. 82).

térahit (*Traganum nudatum*). Tr. p. "Plante très appréciée des chameaux, beaucoup moins des autres herbivores" (Maire 1933, p. 82).

issin (*Salsola foetida*). Tr. p., evergreen. This plant is important for its salt content, but is not considered very nourishing. It is eaten particularly by camels. – "Cette plante est mangée par les chameaux, mais fort peu par les autres herbivores domestiques" (Maire 1933, p. 84).

tasa, or *bender* (*Anabasis articulata*). Tr., L.M. p., bush. Eaten by camels, sheep, and goats. – "Cette plante est mangée par les chameaux; mais elle est peu appréciée des autres herbivores domestiques" (Maire 1933, p. 85).

tahara (*Cornulaca monocantha*). Tr. p. Very appreciated by camels. – "Cette plante est mangée par les chameaux, qui en sont très friands; elle est, par contre, à peu près complètement délaissée par les autres herbivores domestiques" (Maire 1933, p. 85).

témekerkiɣt (*Aerva tomentosa*). Tr., (L.M.) p., evergreen. "Cette plante est peu mangée par les chameaux; mais elle est appréciée des moutons et des chèvres. . . . (Voinot). – Cette plante est mangée par les zébus et les chèvres; les chameaux n'en veulent pas (Duprez)" (Maire 1933, p. 87).

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aḡeneznes (*Glaucium corniculatum*). L.M., U.M. a. "Ainsi nommé parceque, quand les chameaux en mangent, ils restent ensuite qlq. heures dans l'incapacité de boire ni de manger" (Foucauld 1951–52, I, p. 464).

ahoyyar (*Cleome arabica*). Tr., L.M. a. & p. (cf. Gram 1935, p. 36 f.). "Les chameaux refusent cette plante et les chèvres et moutons n'en mangent que très peu (Voinot)" (Maire 1933, p. 99).

tadant (*Boscia senegalensis*). Tr., very rare in Ahaggar, p., bush or tree. Eaten by camels.

aslar (*Morettia canescens*). Tr., L.M. a. & p. (cf. Gram 1935, p. 48 f.). Excellent fodder plant for camels, sheep, and goats. – "Excellente nourriture pour les chameaux et les autres herbivores domestiques" (Maire 1933, p. 102).

ur temes (*Farsetia aegyptiaca*). Tr., L.M., U.M. a. & p. (cf. Gram 1935, p. 47). "Plante appréciée des chameaux et autres herbivores" (Maire 1933, p. 103).

echchengedid (*Farsetia ramosissima*). Tr., L.M. a. & p. (cf. Gram 1935, p. 47). "Plante appréciée des chameaux et autres herbivores" (Maire 1933, p. 104).

aggasit (*Farsetia Hamiltonii*). Tr., L.M. a. & p. (cf. Gram 1935, p. 47). "Plante très appréciée des chameaux et des autres herbivores" (Maire 1933, p. 105).

elmaruget (*Malcomia aegyptiaca*). Tr., L.M. a. (& p.?) (cf. Gram 1935, p. 48). According to Maire the ssp. *longisiliqua* is annual in the Central Sahara, perennial in the Northern Sahara. "Plante très appréciée des chameaux et des autres herbivores" (Maire 1933, p. 105 f.).

érir (*Sisymbrium Reboudianum*). Tr., L.M., U.M. "Elle est mangée par les chameaux, les moutons et les chèvres" (Maire 1933, p. 106).

azezzeg (*Diplotaxis acris*). Very rare in Ahaggar. "Plante appréciée par les chameaux et autres herbivores" (Maire 1933, p. 107).

tanekfayt (*Eruca sativa*). Tr., L.M. a. Eaten by camels, sheep, and goats. – "Plante appréciée des chameaux et autres herbivores;" (Maire 1933, p. 108).

érak (*Savignya parviflora*). Not mentioned from Ahaggar, while found in the Northern Sahara. – "Plante appréciée des chameaux et des autres herbivores domestiques" (Maire 1933, p. 109).

tamaghé (*Moricandia arvensis*). L.M., U.M. a. According to Gram perennial under favourable conditions (Gram 1935, p. 49). Very common in Atakor. The Tuareg consider it one of their very best fodder plants, and it is eaten by camels, sheep, and goats. – "Cette plante est un excellent aliment pour les chameaux; elle est moins appréciée par les autres herbivores domestiques" (Maire 1933, p. 109).

alwat (*Schouwia purpurea*). Tr. a. An extremely important fodder plant to camels. It is also appreciated by sheep, but less so by goats. – "Plante très appréciée des chameaux, beaucoup moins des autres herbivores" (Maire 1933, p. 111).

afiezzen (*Zilla spinosa*). Tr., L.M., U.M. p. Foucauld states this plant to be annual (Foucauld 1951–52, I, p. 373), while according to Gram it seems to be perennial (Gram 1935, p. 50). I have myself seen it in flower even in extremely dry years, and the Tuareg claim it to be perennial. It is eaten by camels, sheep, and goats. – "Excellent aliment pour les chameaux et autres herbivores" (Maire 1933, p. 112).

aferhalar (*Crambe Kralikii*). Tr., L.M., U.M. a. Eaten by camels, sheep, and goats. – "Excellent aliment pour les chameaux et les autres herbivores" (Maire 1933, p. 113).

ummum (*Cayluseа canescens*). Tr., L.M. a. & p. (cf. Gram 1935, p. 68). "l'*oummoum* a une odeur

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824 désagréable qui se communique au lait des an. qui le mangent" (Foucauld 1951–52, III, p. 1204).

abser (*Acacia Raddiana*). Tr., (L.M.) defoliating, summer-green. One of the basic fodder plants. The thorny shoots are eagerly eaten by camels, while goats highly appreciate very young shoots and leaves. Sheep do not feed properly upon acacias, but they eat the fallen fruit-pods which are very nourishing for domestic animals. Fruit-pods are collected as fodder for animals resting in the camps, and branches are frequently cut so that the kids easily can get at this valuable food. – "Les chameaux et autres herbivores mangent les feuilles de cet arbre, malgré la présence des épines stipulaires. Aussi trouve-t-on très souvent au pied des arbres de nombreuses branches coupées par les indigènes pour l'alimentation de leur bêtes. Les fruits constituent une nourriture particulièrement reconstituante pour les chameaux" (Maire 1933, p. 119).

tamat (*Acacia seyal*). Tr., defoliating, summer-green. A very valuable fodder plant like the acacia just mentioned and possessing the same value. – "Les feuilles et les fruits de l'*A. seyal* ont la même valeur nutritive, pour les animaux, que ceux de l'*A. Raddiana*" (Maire 1933, p. 120).

ahtes (*Acacia albida*). Tr., defoliating, summer-green. Rare compared with the two above-mentioned acacias, and therefore less important for fodder. – "Les feuilles et les fruits sont mangés par les herbivores" (Maire 1933, p. 120).

afarfar (*Crotalaria Saharae*). Tr. p., evergreen. "Les chameaux, les moutons, chèvres et ânes mangent cette plante mais pas en grande quantité. Elle passe pour lactogène (Voinot)" (Maire 1933, p. 121).

éhezes (*Trigonella anguina*). Tr., L.M. a. "Bon aliment pour tous les herbivores" (Maire 1933, p. 123).

tachekerut (*Medicago lacinlata*). Tr., L.M., U.M. a. Valuable for camels, sheep, and goats. – "Bon aliment pour tous les herbivores" (Maire 1933, p. 123).

tareda (*Psoralea plicata*). Tr. a. "Cette plante est très appréciée par tous les herbivores" (Maire 1933, p. 125).

tenefé, or *amarseros* (*Tephrosia leptostachya*). Tr. p. "Les chameaux et autres herbivores la mangent" (Maire 1933, p. 125).

adreylal (*Astragalus Vogelii* & *A. eremophilus*). Tr., L.M. a. One of the most important fodder plants for camels, goats, and sheep in Ahaggar – particularly to Tuareg living in the lower parts of the country. *A. Vogelii*: "Ces plantes sont appréciées par tous les herbivores" (Maire 1933, p. 126). *A. eremophilus*: "Bon aliment pour tous les herbivores" (Maire 1933, p. 131).

ékechchekir (*Astragalus pseudotrigonus*). Tr. Annual according to Foucauld (1951–52, II, p. 741), while perennial and evergreen according to Gram (1935, p. 64). – "Cette plante est très appréciée par les ânes, beaucoup moins par les chameaux, les moutons et les chèvres (Voinot)" (Maire 1933, p. 128).

ésker (*Astragalus corrugatus*). Tr., L.M. a. "Bon aliment pour tous les herbivores" (Maire 1933, p. 130).

lagul (*Alhagi maurorum*). Tasilé-n-Ajjer. "Bon aliment pour les herbivores. ... (Kilian)" (Maire 1933, p. 131).

azren (*Monsonia heliotropioides* & *M. nivea*). Tr., (L.M.) a. Excellent fodder plant for camels, sheep, and goats. One of the best fodder plants of Ahaggar. According to the Tuareg it is annual, but Gram states that he found a few perennial plants of the latter species *M. nivea* (Gram 1935, p. 53).

afezzur (*Fagonia Bruguieri*). Tr., L.M. a. & p. (cf. Gram 1935, p. 73). "Cette plante est mangée, malgré

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ses épines, par les chameaux, les chèvres, les moutons, les gazelles et les bovins. ... (Voinot)" (Maire 1933, p. 139). 824

tageruft (*Tribulus terrester*). Tr. a. An extremely valuable fodder plant to camels, sheep, and goats. – "Tous les Tribulus sont très appréciés des chameaux et autres herbivores" (Maire 1933, p. 143).

aboryal, or *tameffereylalt* (*Tribulus alatus & T. macropterus*). Tr. a. (cf. Gram 1935, p. 75). Valuable fodder plants for camels, sheep and goats.

tellakh (*Euphorbia granulata*). Tr., (L.M.) a. (& p.) (cf. Gram 1935, p. 52). "La plante est mangée par les gazelles, les chèvres et les moutons. ... (Voinot)" (Maire 1933, p. 146).

téhak (*Salvadora persica*). Tr., evergreen tree or bush. Eaten by camels. – "Les rameaux feuillés sont mangés par les chameaux;" (Maire 1933, p. 150).

azawa (*Tamarix gallica*). Tr., L.M., evergreen tree or bush. The leaves are not very nourishing, but are saliferous for which reason the plant has some value as fodder.

tabarekkat (*Tamarix aphylla*). Tr., evergreen tree. The leaves contain salt and are eaten to some extent by domestic animals.

tahawet (*Helianthemum Lippii*). Tr., L.M. p., evergreen.

urrug (*Helianthemum ellipticum*). Tr., L.M. Annual according to Foucauld (1951–52, III, p. 1588). – "Ces deux *Helianthemum* sont très appréciés des chameaux et autres herbivores" (Maire 1933, p. 160).

tattayt (*Pituranthos scoparius*). Tr., L.M., U.M. p. In my notes I have this plant among the fodder plants of camels, sheep, and goats. According to Maire it is venomous:— "Ces plantes sont toxiques pour la plupart des herbivores; cependant les chameaux en mangent un peu quand ils n'ont pas autre chose à se mettre sous la dent" (Maire 1933, p. 163).

tazenfela (*Limoniastrum Guyonianum*). Rare in the Central Sahara, and apparently unknown in Ahaggar (cf. Maire 1933, p. 166). – "Cette plante est peu appréciée des chameaux et autres herbivores, sauf au moment de sa floraison; les inflorescences sont alors broutées avidement" (Maire 1933, p. 166).

selluf (*Periploca laevigata*). Tr., L.M. "...; peu brouté par les herbivores" (Maire 1933, p. 170).

arellachchem (*Solenostemma oleifoleum*). Tr. p., bush. Of very little value for fodder. – "La plante est très peu broutée par les herbivores; toutefois les moutons en mangent un peu (Voinot)" (Maire 1933, p. 171).

tachkat (*Pergularia tomentosa*). Tr., L.M. p., evergreen. – "... peu brouté par les herbivores" (Maire 1933, p. 172).

tahenna (*Heliotropium undulatum*). Tr., L.M. Foucauld has it as annual (Foucauld 1951–52, II, p. 612), while according to Gram it is perennial and evergreen (Gram 1935, p. 34). – "Cette plante est un excellent aliment pour les chameaux et les autres herbivores" (Maire 1933, p. 177).

alkah (*Trichodesma africanum*). Tr., L.M. a. (& p.) (cf. Gram 1935, 35). – "Excellent aliment pour les chameaux et les autres herbivores" (Maire 1933, p. 178).

aginest (*Molikia callosa*). Tr. p., evergreen (cf. Gram 1935, p. 35). According to Maire frequently annual in the Central Sahara (Maire 1933, p. 179). "C'est un des aliments préférés des chameaux" (Maire 1933, p. 179).

taynast (*Echium humile*). Tr., L.M. a. One of the very best fodder plants of Ahaggar. Valuable to all animals.

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824 *érir*, or *tenat* (*Lavandula coronopifolia*). Tr. p., evergreen (cf. Gram 1935, p. 59). – "Cette Lavande (arabe: *sejert-el-aroui*) est mangée par tous les herbivores, mais elle est particulièrement appréciée par les Mouflons (Voinot)" (Maire 1933, p. 182).

awit, also known by its collective name *awihat* (*Salvia Chudaei*). Tr., L.M. I have noted it as a fodder plant for camels, sheep, and goats. – "Cette plante est mangée par les chèvres et les moutons, mais non par les chameaux" (Maire 1933, p. 187).

takmezzut (*Teucrium polium*). Tr., L.M. Foucauld states it to be an annual plant (Foucauld 1951–52, p. 821), while it is perennial according to Gram's investigations in Mouydir (Immidir) (Gram 1935, p. 60). The Tuareg have informed me that the plant can be found in certain river valleys all the year round, and even in dry years. The plant is eaten by camels, sheep, and goats.

éfelehleh (*Hyoscyamus muticus* ssp. *falezlez*). Tr. a. & p. (cf. Gram 1935, p. 71). – "La plante n'est pas toxique pour les bestiaux, qu'elle fait engraisser;" (Maire 1933, p. 192).

agerwa (*Antirrhinum ramosissimum*). Tr. – "... broutée par les herbivores, ..." (Maire 1933, p. 195).

anaddam (*Plantago ciliata*). Tr., L.M., U.M. a. Eaten by domestic animals. – "Plante très appréciée des herbivores" (Maire 1933, p. 199).

tanetfirt (*Pulicaria crispa*). Tr., (L.M.) perennial according to Foucauld (1951–52, III, p. 1304). Important fodder plant of camels, sheep, and goats. – "La plante est mangée par les chameaux et les autres herbivores domestiques (Voinot)" (Maire 1933, p. 207).

tanéyot (*Asteriscus graveolens*). Tr., L.M., U.M. p. (cf. Gram 1935, p. 42). Important fodder plant of camels, sheep, and goats. – "Plante très appréciée des chameaux et autres herbivores (Voinot)" (Maire 1933, p. 208).

téhatit (*Pentzia Monodiana*). L.M., U.M. p. Important fodder plant of camels, sheep, and goats.

téhereggelé (*Artemisia judaica*). Tr., (L.M.) p., evergreen. Eaten by camels, and possibly also by sheep and goats. When camels eat too much of this plant they may contract a stomach disease, but the plant is also considered a remedy for intestinal worms.

zézzeré (*Artemisia herba-alba*). (Tr.), L.M. p., evergreen. Eaten by camels, sheep, and goats.

teféryast (*Echinops Bovei*). Tr., L.M. p. – "Cette plante est mangée par les chameaux, les ânes, les moutons et les chèvres (Voinot)" (Maire 1933, p. 215).

ahu (?). a. "...; il est un bon pâturage pour les chameaux et les chèvres, mais il donne au lait une odeur d'ail" (Foucauld 1951–52, II, p. 500).

ajako (?). a. "ressemble un peu à la luzerne, mais est plus petite qu'elle; est comestible pour les p. et les an.; se trouve dans l'Ah, mais seulement aux altitudes supérieures à 2.000 mètres" (Foucauld 1951–52, II, p. 712).

FODDER PLANTS VERY APPRECIATED BY DONKEYS

téberimt (*Andropogon laniger* & *Panicum Pariatorei*). Tr., L.M., p.

tésengelt (*Saccharum Ravennae*). Tr., L.M. p.

afezu (*Panicum turgidum*). Tr., (L.M.) p.

aremmud (*Aristida plumosa*). Tr. p. (cf. Gram 1935, p. 54).

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taḡamayt (*Danthonia Forskalei*). Tr., L.M. a. & p. (cf. Gram 1935, p. 55).
taḡamayt (*Cynodon Dactylon*). Tr., L.M., U.M. p.? (cf. Gram 1935, p. 55).
taysest (*Eragrostis bipinnata*). Tr., L.M. biennial (cf. Gram 1935, p. 55).
térakob (*Grewia populifolia*). Tr. p.
awkal (*Cynomorium cocceineum*). Tr., L.M.
tašhart (*Mentha longifolia*). Tr., L.M. a.
ahahel (*Cistanche Phelypaea*). Tr., L.M.
teḡellet (*Colocynthis vulgaris*). Tr., (a.), p. (cf. Gram 1935, p. 50).
alked (*Cucumis pustulatus*). Tr.
tanetfirt (*Publicaria crispa*). Tr., (L.M.) p. (cf. Foucauld 1951–52, III, p. 1304).
taḡuk (*Artemisia campestris*). Tr., L.M., U.M. p., evergreen?.

In my early notes on donkeys' fodder plants I have three names which I have not been able to identify – due to the fact that I did not then take Tuareg words down in *tifinaṛ*. The three names are *aharowa* (? = *aharay*; *Aristida* sp. & *Danthonia Forskalei*), *anador* (? = *annaddam*; *Plantago ciliata*), and *terforgit*, or rather *terfukkit*.

Maire mentions that the plant known as *ekechchekir* (*Astragalus pseudotrigonus*), Tr. p., evergreen (cf. Gram 1935, p. 64), is very appreciated by donkeys, but less so by camels, sheep, and goats (Maire 1933, p. 128).

FODDER PLANTS EATEN PARTICULARLY BY ZEBUS

tahlé (*Typha elephantina*). Tr. p.
akeywod (*Typha australis*). Tr., L.M. p.
tésengelt (*Saccharum Ravennae*). Tr., L.M. p.
aṛemmud (*Aristida plumosa*). Tr. p.
taṛemmut (*Aristida* sp.). According to Maire (1933) this name has the same meaning as that just mentioned above, while I have been told by the Tuareg that *aṛemmud* is as high as barley, while *taṛemmut* is much lower.
ézeng (*Cyperus laevigatus*). Tr. p.
ilegga (*Scirpus Holoschoenus*). Tr., L.M. p.
taleggit (*Juncus maritimus*). Tr., L.M. p.
aramas (*Atriplex Halimus*). Tr., L.M., U.M. p.
issin (*Salsola foetida*). Tr. p., evergreen.
taysest (*Eragrostis bipinnata*). Tr., L.M. biennial (cf. Gram 1935, p. 55).

The plants *aramas* and *issin* are important to zebus mainly for their salt content. It will be noted that the species here mentioned as fodder plants of zebu oxen are mainly perennial plants. Many of them demand humid soil, which is found close to most agricultural settlements where oxen are bred by agriculturists. Most of these peoples have only one to three oxen which generally graze tethered near the village. The oxen thus do not benefit much from the rich annual pastures in years of abundant rainfall, but, on the other hand, they are fed with garden-grown plants, as are donkeys of sedentary peoples.

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